



REPORT ON

Five Days AICTE Training And Learning (ATL) Online Faculty Development Programme on

“Lean Manufacturing in Industry 4.0 Scenario”

AICTE File No.(Sanction letter file No.) : 2-23/AICTE/ATL-HQ/2021-22/2107 dt
29th December, 2021.

ATL FDP Application No.: 1614247559

24th – 28th JANUARY 2022



Dr.M.Karthikeyan, Professor
Co-ordinator

Department of Mechanical Engineering
RajaRajeswari College of Engineering
#14, Ramohalli cross, Kumbalagodu, Mysore road,
Bengaluru - 560 074
Karnataka



- **AICTE Training And Learning (ATAL) Online Faculty Development Programme on “Lean Manufacturing in Industry 4.0 Scenario”** conducted from 24th to 28th January 2022. Around 107 participants from different parts of the country participated.

The speakers for the 5- days ATAL Online FDP’s on “Lean Manufacturing in Industry 4.0 Scenario” conducted from 24th to 28th January 2022 were

	<p>Dr.S.R.Devadasan, Professor Department of Production Engineering, PSG College of Technology, Coimbatore. He has obtained a Doctor of Science. He has 30 years of teaching and research experience. He has published 130+ research papers in reputed international journals.</p> <p>He has guided 20 research scholars to obtain a Ph.D.</p>
	<p>Dr.A.Murugarajan, Professor and Head of Department of Robotics and Automation at Sri Ramakrishna Engineering College, Coimbatore. He has 19 years of academic and 5 years of research experience. He has published twenty-four research papers in reputed International Journals and Conferences.</p>
	<p>Dr.V.M.M.Thilak, Associate Professor, Nehru Institute of Engineering and Technology, Coimbatore. He has 7 years of teaching experience. He has published 18+ research papers in a reputed international journal.</p>

	<p>Dr.S.Vinodh, Associate Professor, Department of Production Engineering., NIT-Trichy. His areas of Interest are Agile manufacturing, Industry 4.0, lean production, smart manufacturing, etc. He has 13 years of teaching experience. He has published 100+ research papers in reputed international journals. He has obtained Various grants from DST, CSIR, SERB, etc</p>
	<p>Dr. Raju B S, Professor and Special Officer (Evaluation), Department of Mechanical Engineering, REVA University, Bengaluru. He has 20 years of teaching experience. He has published more than 30+ research papers in reputed international journals. He has received research funding from GTRE(DRDO), VTU, VGST & the Institute of Engineers.</p>
	<p>Engr. Subbiah Ranganathan (Shortly Engr.S.R.Nathan) is having 34 Years in both industrial and 2nd & 3rd Party Auditing. He has served in various Mfg. Plants related to 50 types of Auto Components, Tool Room, Sheet Metal Components, Plastic components, Automotive OEM, and 250 types of chemical products. He has performed 2nd and 3rd Party Audits in more than 1100 types of organization in ISO 9001, ISO 14001, ISO 45001, ISO 13485, ISO 50001, ISO 55001, ISO 27001, ISO 22301, ISO 20000-1, MDD/93/42/EEC & Schedule D & Q for Saudi Aramco Contractor Assessment.</p>

	<p>Mr. Rajeev Nambiar is an engineer by education and holds a Masters's Degree in Yoga. A Media and PR professional with a history of achieving strategic business goals and enhancing system functionality with a focus on Team-building, Communications, emerging technologies, and Digital trends. Currently Director: Institutional Programs and Teachers, The Art of Living.</p>
	<p>Dr. V.R. Pramod is working as a Professor in the Mechanical Engineering Department of NSS College of Engineering, Palakkad, India. He is specialized in Maintenance Engineering and Management. He did his PG and Ph.D. in Supply Chain Management in IIT Delhi. He produced 7 Ph. Ds. He has seven years of industrial experience and twenty-one years of teaching experience. He has published over 100+ research papers in reputed international journals. His current areas of research interest include Maintenance quality, Supply chain management, Telecom logistics, and Service management. He is specialized in maintenance management, supply chain management, and JIT.</p>
	<p>Dr. Nagaraja Jade, Senior CAE Engineer, SBD- NVH, Whirlpool of India, Pune. He has 15 years of experience in teaching and industry. He is specialized in Mechanical and Aerospace Engineering.</p>

	<p>Dr. N. M. Sivaram, Assistant Professor, Department of Mechanical Engineering., NIT-Puducherry. His areas of Interest are Production Engineering, Industrial Safety Engineering. He has published 12+ research papers in reputed international journals.</p>
	<p>Dr. Mahesh. V.M, Assistant Professor Department of Mechanical Engineering Sri Jayachamarajendra College of Engineering, Mysuru. He has published 15+ research papers in reputed international journals.</p>
	<p>Mr. Ramaprakash Holla, MD, Distinct Productivity Solutions, Bengaluru. He has 25 years of overall experience in the manufacturing industry. His areas of expertise are CNC machines, Jigs & Fixtures, Robotics & Automation, Toyota Production System, and Lean Manufacturing. Being a founder and Managing Director of Distinct Productivity Solutions, since September 2004, he is engaged in setting up an ISO9001:2008 & ISO 14000 Certified manufacturing organization which is engaged in the manufacturing of precision components for Rexroth Bosch, Endries International Inc, USA, Bitzer Corporation Canada, Pramac SRL, Italy, etc.</p>
	<p>Dr. Pramodkumar S K, Associate Professor, Department of Mechanical Engineering, REVA University, Bengaluru. He has 5 years of experience in teaching and 5 years in research. He has published 25+ research papers in reputed international journals.</p>

**Report on AICTE Training And Learning (ATAL) Online Faculty Development Programme
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**Programme Schedule of ATAL Online FDP’s on “Lean Manufacturing in Industry 4.0 Scenario”
conducted from 24th to 28th January 2022**

Day and Date	Session-1 9.00 a.m. to 11.00 a.m.		Session-2 11.15 a.m. to 1.15 p.m		Session-3 2.00 p.m. to 4.00 p.m
Day 1 Monday, 24 th Jan 2022	Inauguration and Fundamentals of Lean Manufacturing by Dr.S.R.Devadasan Professor, PSGCT, Coimbatore.	Break 11.00 a.m. to 11.15 am	Lean Deployment in Industry Requirements by Dr.A.Murugarajan Professor, SREC, Coimbatore.	Lunch Break 1.15 p.m. to 2.00 p.m .	Lean Manufacturing through Total Productive Maintenance (TPM) by Dr.N.M.Sivaram Assistant Professor, NIT-Karaikal.
Day 2 Tuesday, 25 th Jan 2022	Lean Tool Implementation by Dr.S.Vinoth Associate Professor, NIT-Tiruchi.		Smart Manufacturing -Industry 4.0 by Dr. Raju B S Professor and Special Officer- Evaluation REVA University, Bengaluru.		Case study on Lean Manufacturing by Engr. Subbiah Ranganathan (Shortly Engr.S.R.Nathan), Director, Azure Management Consultancy FZ LLC, UAE.
Day 3 Wednesday, 26 th Jan 2022	Lean Manufacturing- Industry 4.0 by Dr.S.Vinoth Associate Professor, NIT-Tiruchi.		JIT and Kaizen in Lean Manufacturing by Dr.V.R.Pramod, Associate Professor, NSSCE, Palakkad.		Stress Management by Mr. Rajeev Nambiar, Art of Living, Bengaluru.
Day 4 Thursday, 27 th Jan 2022	AI for Manufacturing by Dr Pramodkumar S K, Associate Professor, REVA University, Bengaluru.		Industry 4.0 through Agile Manufacturing by Dr.V.M.M.Thilak Associate Professor, NIET, Coimbatore		Smart Manufacturing by Dr.Mahesh.V.M Assistant Professor, SJCE, Mysuru.
Day 5 Friday, 28 th Jan 2022	Smart Sensors for Industry 4.0 / Digital Manufacturing by Dr.A.Murugarajan, Professor, SREC, Coimbatore		Industry 4.0 by Mr.Ramaprakash Holla, Managing Director, Distinct Productivity Solutions, Bengaluru. and Applications of Lean Manufacturing in industries by Dr. Nagaraja Jade, Senior CAE Engineer, SBD- NVH, Whirlpool of India, Pune.		Valedictory function, Feed back session and Assessment Test.

**Report on AICTE Training And Learning (ATAL) Online Faculty Development Programme
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The AICTE Training and Learning (ATAL) Academy online mode of FDPs are commenced on 24th Jan 2022 is inaugurated by the Prof.S.G.Dhande, Former Director IIT Kanpur & Padmashri Awardee, be the Chief Guest for the ‘Inaugural Ceremony’ of ATAL FDPs on 24th January 2022 from 11:00 a.m. to 11.30 a.m (IST).

Prof. Anil D. Sahasrabudhe, Chairman, AICTE will be the Guest of Honour for the event.

Being a distinguished academic leader, Prof.S.G.Dhande has shared his expertise and views on evolving trends, disruptive technologies, changing job scenarios, academia-industry linkage, and translating research into impactful applications to the participants.

All India Council For Technical Education
AICTE Training and Learning (ATAL) Academy

Chief Guest
Guest of Honour

Inaugural Ceremony
08 ATAL FDPs
24th JAN
11:00

Prof. S. G. Dhande
Former Director, IIT Kanpur

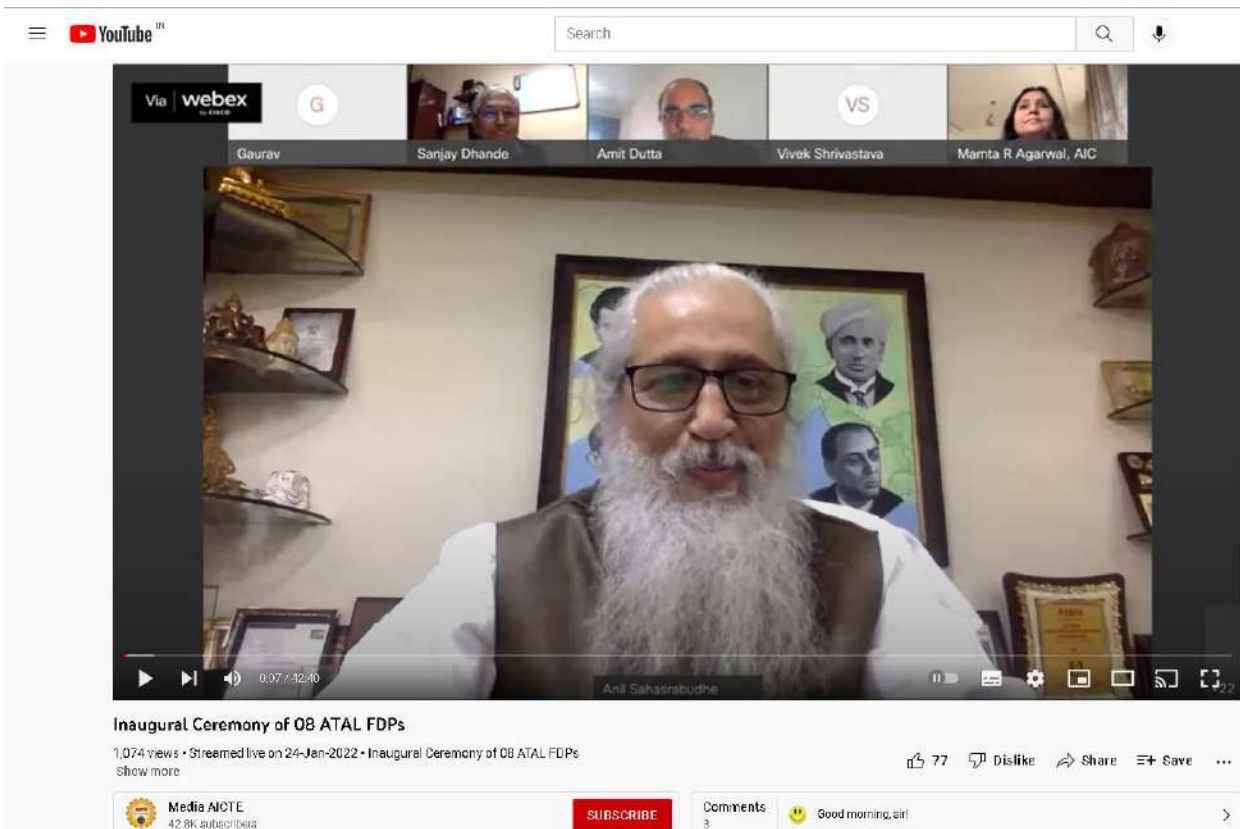
Prof. Anil D. Sahasrabudhe
Chairman AICTE

Mamta R. Aggarwal
Adviser-I
AICTE

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Invitation of the Inaugural Ceremony of 08 ATAL FDPs starting from 24th January 2022.

**Report on AICTE Training And Learning (ATAL) Online Faculty Development Programme
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Prof. Anil D. Sahasrabudhe, Chairman, AICTE addressed the coordinators and the participants



**Prof.S.G.Dhande, Former Director IIT Kanpur & Padmashri Awardee inaugurate the ATAL
Online FDP and addressed the coordinators and the participants**

**Report on AICTE Training And Learning (ATAL) Online Faculty Development Programme
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List of participants attended the ATAL Online FDP on Lean Manufacturing in Industry 4.0 scenario

Sl. No	Name as per the registration in the AICTE ATAL portal	Designation	Name of the college
1	S Sivakumaravel	Assistant Professor	Kamaraj College Of Engineering And Technology
2	A Jhony	Assistant Professor	Bharath Institute Of Higher Education And Research
3	Abhishek Tripathi	Research Scholar	Mnnit Allahabad
4	Ambrish Singh	Assistant Professor	Allenhouse Institute Of Technology, Kanpur
5	Anbarasu P	Assistant Professor	Sri Sai Ram Engineering College
6	Anita Behra	Research Scholar	Tripura University
7	Arumugam K	Assistant Professor	Srm Valliammai Engineering College
8	Arunraj.A	Assistant Professor	M.Kumarasamy College Of Engineering
9	Barkha Gupta	Associate Professor	Modi Institute Of Technology, Kota, Rajasthan
10	Bharti Yadav	Assistant Professor	Allenhouse Institute Of Technology , Rooma
11	Bhuvaneshwari s	Assistant Professor	Easwari Engineering College
12	C Kumaran	Assistant Professor	C Abdul Hakeem College Of Engineering And Technology
13	Dhyaneshwaran J	Assistant Professor	Sri Krishna College Of Engineering And Technology
14	Dr Fauzia Siddiqui	Professor	Jecrc Foundation Jaipur
15	Dr M Karthikeyan	Professor	Rajarajeswari College Of Engineering
16	Dr Rishi JP	Associate Professor	Vidyavardhaka College Of Engineering Mysuru
17	Dr Rohit Sharma	Assistant Professor	Amity University Uttar Pardesh Noida
18	Dr Umang Soni	Assistant Professor	Nsut, New Delhi
19	Dr. D Arun Kumar	Associate Professor	Bharath Institute Of Higher Education And Research
20	Dr. Dibyajyoti Ghosh	Assistant Professor	Vellore Institute Of Technology, Vellore

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21	Dr. N. Manikandan	Associate Professor	P.S.R. Engineering College, Sivakasi
22	Dr. Rajesh Gurani	Assistant Professor	Bharat Ratna Indira Gandhi Collage Of Engineering, Solapur
23	Dr. Sharyn Prabhakar Bangera	Assistant Professor	Usha Pravin Gandhi College Of Arts, Science And Commerce
24	Dr. Vishwanath K C	Associate Professor	Rajarajeswari College Of Engineering
25	Dr.A.Balamurugan	Professor	Bharath Institute Of Higher Education And Research
26	Dr.J.Selvakumar	Professor	V.S.B.Engineering College
27	Dr.K.Ravi Kumar	Professor	Kpr Institute Of Engineering And Technology
28	Dr.M.Arasu	Hod	Psg Polytechnic College
29	Dr.M.Thilak	Associate Professor	Srm Trp Engineering College, Trichy, Tamilnadu
30	Dr.Namrata gupta	Assistant Professor	Mits Gwalior
31	Dr.P.Gopinath	Hod/Asp	K S R Institute For Engineering And Technology
32	Dr.P.K.Chidambaram	Professor	New Prince Shri Bhavani College Of Engineering And Technology
33	Dr.R.Manivannan	Professor	Avs Engineering College
34	Dr.Raghavendran C R	Assistant Professor	Easwari Engineering College
35	Dr.S.M.Udaya Krithika	Assistant Professor	Sona College Of Technology
36	Dr.S.Umamaheswari	Assistant Professor	Sathyabama Institute Of Science And Technology
37	Dr.Sankar Ganesh R	Assistant Professor	M.Kumarasamy College Of Engineering
38	Dr.Satheesha V	Associate Professor	Rajarajeswari College Of Engineering
39	Dr.V.Muthuraman	Professor	Vistas,Chennai
40	Durairaj M	Asso. Professor	Peri Institute Of Technology
41	G Eswar Balachandar	Assistant Professor	Annamacharya Institute Of Technology And Sciences, Rajampeta
42	G. Mahalakshmi	Lecturer	P.A.C. Ramasamy Raja Polytechnic College, Rajapalayam
43	Gokula Krishnan S	Senior Lecture	Nandha Polytechnic College

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44	Harish Kumar Jegannathan	Assistant Professor	Academy Of Maritime Education And Training (Amet), Deemed To Be A University
45	Harish Kumar Nirala	Assistant Professor	Rajiv Gandhi Government Engineering College Kangra At Nagrota Bagwan, Distt. Kangra, Himachal Pradesh
46	Harmanpreet Kaur	Assistant Professor	Chandigarh University
47	Iti Dikshit	Assistant Professor	Maharishi Markandeshwar Deemed To Be University
48	Jeevarathinam A	Assistant Professor	Hindusthan Institute Of Technology
49	K S Madhu	Assistant Professor	Rajarajeswari College Of Engineering
50	K.Mani	Assistant Professor	Sona College Of Technology
51	K.Vignesh	Assistant Professor	Bharath Institute Of Higher Education And Research
52	Kadam Priyanka Valu	Lecturer	Guru Gobind Singh Polytechnic, Nashik
53	Kanagaraj C	Assistant Professor	P.S.R. Engineering College, Sivakasi
54	Karthick A	Assistant Professor	Arifa Institute Of Technology
55	M Sivasankaran	Assistant Professor	Dhirajlal Gandhi College Of Technology
56	M.Balakumar	Assistant Professor	Sri Venkateswara College Of Engineering
57	Mahesh Khadwal	Hod	Ct Group Of Institutions
58	Malini Tn	Associate Professor	Malinisreenivas@Gmail.Com
59	Mangesh Manohar Sanap	Assistant Professor	Indira School Of Business Studies, Pune
60	Manikandan A	Professor	Lord Jegannath College Of Engineering And Technology
61	Manoj Kumar Shanmugam	Assistant Professor	Hindusthan Institute Of Technology
62	Mathan J	Assistant Professor	K S R Institute For Engineering And Technology
63	Mr Amit	Assistant Manager	Mit Aurangabad
64	Mr G Kirubakaran	Assistant Professor	Sri Venkateswara College Of Engineering

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65	N.Ramasubbu	Assistant Professor	Government College Of Engineering Srirangam
66	Nandakumar V	Lecturer	Indira Gandhi Polytechnic College, Mahe
67	Neeraj Sharma	Associate Professor	Maharishi Markandeshwar (Deemed To Be University), Mullana
68	Nirmaladevi.S	Ap	Sengunthar Engineering College
69	Nithya N	Assistant Professor	Srm Valliammai Engineering College
70	Nomita Dey	Assistant Professor	Chandigarh University
71	P Satyanarayana Raju	Assistant Professor	Vardhaman College Of Engineering
72	P. Ravikumar	Lecturer	Excel Polytechnic College
73	P.Mageswari	Assistant Professor	Prathyusha Engineering College
74	Patil Nivrutti Vishram	Assistant Professor	Kk Wagh Institute Of Engineering Education And Research
75	Pratik Joshi	Assistant Professor	Mit-Adt University Pune
76	R Karthick	Assistant Professor	Prathyusha Engineering College
77	R. Muraliraja	Associate Professor	Vistas
78	Radhakrishna R Kumshikar	Assistant Professor	Rajarajeswari College Of Engineering
79	Rangarajan R V	Assistant Professor	Hindusthan Institute Of Technology
80	Roshan Ramesh Rathod	Assistant Professor	Wainganga College Of Engineerin And Management Nagpur
81	S R Rajabalayanan	Professor@Head	Hindustan Institute Of Technology
82	S.Arunkumar	Assistant Professor	Istas
83	Sameem Suha M	Assistant Professor	Thamirabharani Engineering College
84	Saravanan R	Assistant Professor	Kit-Kalaingar Karunanidhi Institute Of Technology
85	Sathyaprakash Anekallu	Asst.Professor	Sit Mangaluru
86	Selvarasu A	Assistant Professor	V.S.B Engineering College
87	Selvendran R	Associate Professor	Hindusthan Institute Of Technology

**Report on AICTE Training And Learning (ATAL) Online Faculty Development Programme
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88	Shaman Gupta	Assistant Professor	Mmdu
89	Shital V. Patel	Assistant Professor	Bharati Vidyapeeth College Of Engineering
90	Shivalingaiah K	Assistant Professor	Rajarajeswari College Of Engineering, Bengaluru
91	Shriram.L	Assistant Professor	V.S.B. Engineering College, Karur, Tamilnadu
92	Sneha Bharti	Assistant Professor	Shri Guru Nanak Girls Degree College,Lucknow
93	Sony Priyanka D	Assistant Professor	Srm Valliammai Engineering College
94	Souradeep Koley	Research Scholar	Indian Institute Of Technology Roorkee
95	Sridevi.O.A	Assistant Professor	Karpagam Institute Of Technology
96	Tamil Selvam N	Assistant Professor	Veltech Rangarajan Dr.Sagunthala R&D Institute Of Science And Technology
97	Thanuj Kumar M	Associate Professor	Rajarajeswari College Of Engineering
98	Thirugnanasambanthan N	Assistant Professor	C. Abdul Hakeem College Of Engineering And Technology, Melvisharam.
99	Vasanthakumar R	Assistant Professor	K S R Institute For Engineering And Technology
100	Veeresh Tripathi	Assistant Professor	School Of Management Sciences, Varanasi
101	Venkateshwaran R	Lecture	Excel Polytechnic College
102	Vijaykumar Ns	Assistant Professor	Sri Sai Ranganathan Engineering College Coimbatore
103	N Sreenivasalu Reddy	Associate Professor	Rajarajeswari College Of Engineering
104	M Revathy	Asst. Prof.	Sri Ramachandra Institute Of Higher Education And Research
105	Aman.J.Borkar	Asst. Prof.	Delhi Skill And Entrepreneurship University
106	Vinod Kumar T	Assistant Professor	Vels Institute Of Science Technology And Advanced Studies
107	D K Sowmiya Lakshmi	Asst. Prof.	Bharath Institute Of Higher Education And Research

**Report on AICTE Training And Learning (ATAL) Online Faculty Development Programme
On “Lean Manufacturing in Industry 4.0 Scenario” 24th to 28th January 2022.**



Five Days AICTE Training And Learning (ATAL)

**Online Faculty Development Programme
on**

“Lean Manufacturing in Industry 4.0 Scenario”

24th- to 28th January 2022

**Department of Mechanical Engineering, RajaRajeswari College of Engineering,
Kumbalagodu, Bengaluru-560074.**

Agenda



Inaugural function

The screenshot shows a YouTube video player interface. The video content is a Zoom meeting banner for the inauguration of the AICTE Training And Learning (ATAL) Online Faculty Development Programme. The banner features the following text:

RAJARAJESWARI COLLEGE OF ENGINEERING
Affiliated to VTU, Belgaum, Approved by AICTE, New Delhi & Govt of Karnataka
C/O, Ramaballi Cross, Kumbalagodu Post, Mysore Road, Bengaluru - 560 074

Department of Mechanical Engineering
Conducting
Five Days AICTE Training And Learning (ATAL)
Online Faculty Development Programme
on
“Lean Manufacturing in Industry 4.0 Scenario”

Chief Patron
Dr. A. C. Shanmugam
B.A.L.L.B, FIMSA, FRCPS (Glasgow, UK)
Chairman
RajaRajeswari Group of Institutions

Co - Patron
Er. A.C.S. Arun Kumar
B.Tech (Hons), LMISTE, MIET, (UK), LMCSI,
Vice Chairman
RajaRajeswari Group of Institutions

Date: 24th to 28th January 2022 Time: 9:00AM to 4.00PM

Below the banner, the video title is "ATAL Online FDP on Lean Manufacturing in Industry 4.0 Scenario. 24th - 28th January 2022" with 146 views and a stream date of Jan 24, 2022. The video has 10 likes and options for dislike, share, and save.

**Inauguration of AICTE Training And Learning (ATAL) Online Faculty Development
Programme**

**Report on AICTE Training And Learning (ATAL) Online Faculty Development Programme
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Inaugural Address by Dr.T.Chandrashekar, Principal, RajaRajeswari College of Engineering



Lighting the lamp by Dr.N.Sreenivasalu Reddy, Associate Professor, Department of Mechanical Engineering

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Lighting the lamp by Prof. K.S. Madhu, Assistant Professor, Department of Mechanical Engineering



Lighting the lamp by Dr.M.Karthikeyan, Professor, Department of Mechanical Engineering and Co ordinator of the ATAL Online FDP

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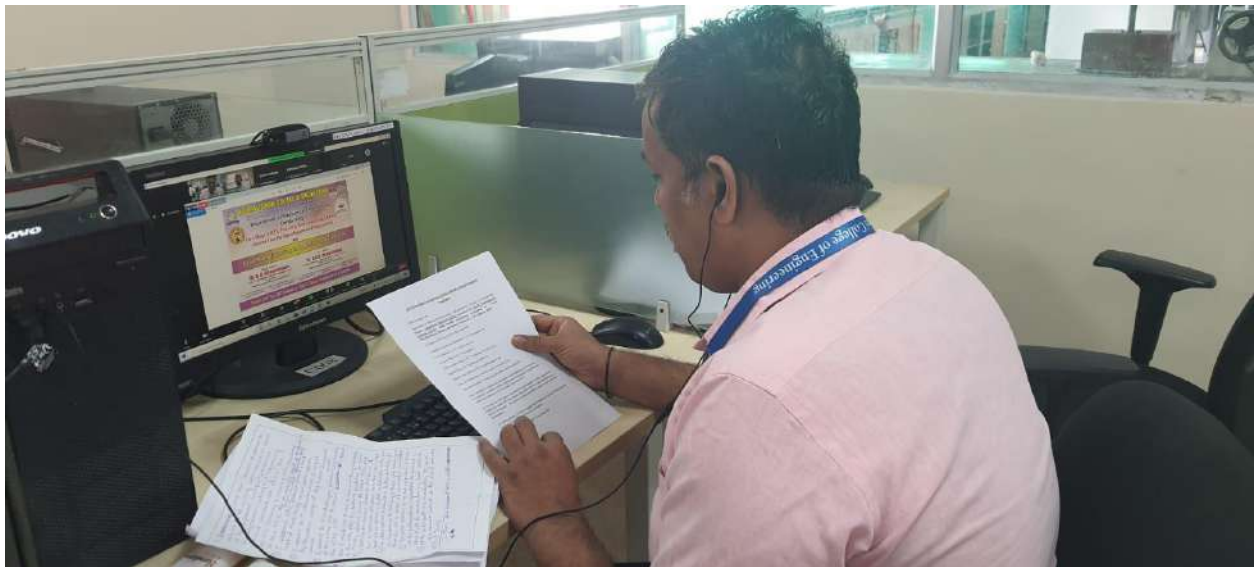


Lighting the lamp by Prof. K.S. Madhu, Assistant Professor, Department of Mechanical Engineering



Inaugurated by Dr.R.Balakrishna, Dean, RajaRajeswari College of Engineering

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**Welcome address by Dr.C.Ramesh, HOD-MECH, Department of Mechanical Engineering,
RajaRajeswari College of Engineering**



**Dr.Satheesha. V. , Associate Professor, Department of Mechanical Engineering comparing the
ATAL Online FDP**

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Mr.G. Sathishkumar, Foreman, Department of Mechanical Engineering, RajaRajeswari College of Engineering supported to conduct the ATAL Online Faculty Development Programme.



Dr.Satheesha, Associate Professor, Department of Mechanical Engineering, RajaRajeswari College of Engineering supported to conduct the ATAL Online Faculty Development Programme

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24.1.2022 Day 1 Session 1- 9 a.m. to 11 a.m

Dr.S.R.Devadasan, Professor, Department of Production Engineering, PSGCT, Coimbatore.

The screenshot displays a Zoom meeting interface. The main content is a presentation slide with a green background and the title "Introduction". The slide lists several bullet points:

- Intensification of competition
- Impact of globalisation
- Role of lean manufacturing in the competitive world.
- Difference between push production and pull production system
- Need of replacing traditional push based production system through the implementation of lean production system for enabling the organisations to face competitive world.

A "Participants" window is overlaid on the slide, showing a list of attendees:

Name	Role	Mute	Video	Chat
ISERT (Host, me)	Host	Off	Off	Off
S.R.Devadasan (Co-host)	Co-host	On	On	Off
ISERT (Co-host)	Co-host	Off	Off	Off
Nigunkumar (Co-host)	Co-host	Off	Off	Off
AT Abhishek Tripathi	Participant	Off	Off	Off

The Zoom control bar at the bottom shows various icons for Unmute, Start Video, Security, Participants (99), Polls, Chat (29), Share Screen, Record, Breakout Rooms, Reactions, More, and End.

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24.1.2022 Day 1 Session 2 11.15 am to 1.15 p.m.

Dr A.Murugarajan, Professor and Head, Department of Robotics and Automation Engineering, Sri Ramakrishna Engineering College, Coimbatore

The screenshot shows a Zoom meeting interface. The main content is a presentation slide titled "Introduction". The slide lists several key points:

- Competitive business is relatively high.
- Companies must find ways to develop business in order to increase competitiveness and sustainable business practices.
- Operation cost reduction is critical to survival of business.
- An important factor is the ability to use analysis technique to reduce either non-value-added activities or necessary non-value-added activities in manufacturing processes.
- Cost = Activities involved (VA+NVA)
- Globalization, industries are adopting new tools and techniques to produce goods to compete and survive in the market.
- Rapid growing manufacturing culture and Industry 4.0 (Lean Automation)

Below the text, there are three small diagrams: "Lean Manufacturing" with a gear and lightbulb, a flow diagram showing "MANUFACTURE" leading to "QUALITY" and "COST", and "PROFITABILITY" with a bar chart. At the bottom of the slide, it says "Lean has a very extensive collection of tools and concepts." and "Where should you begin?". The Zoom interface shows a list of participants on the right, including Dr. A. Murugarajan (Co-host) and several other attendees.

The screenshot shows a YouTube live stream titled "Principles of Lean". The video content includes a diagram with six numbered principles:

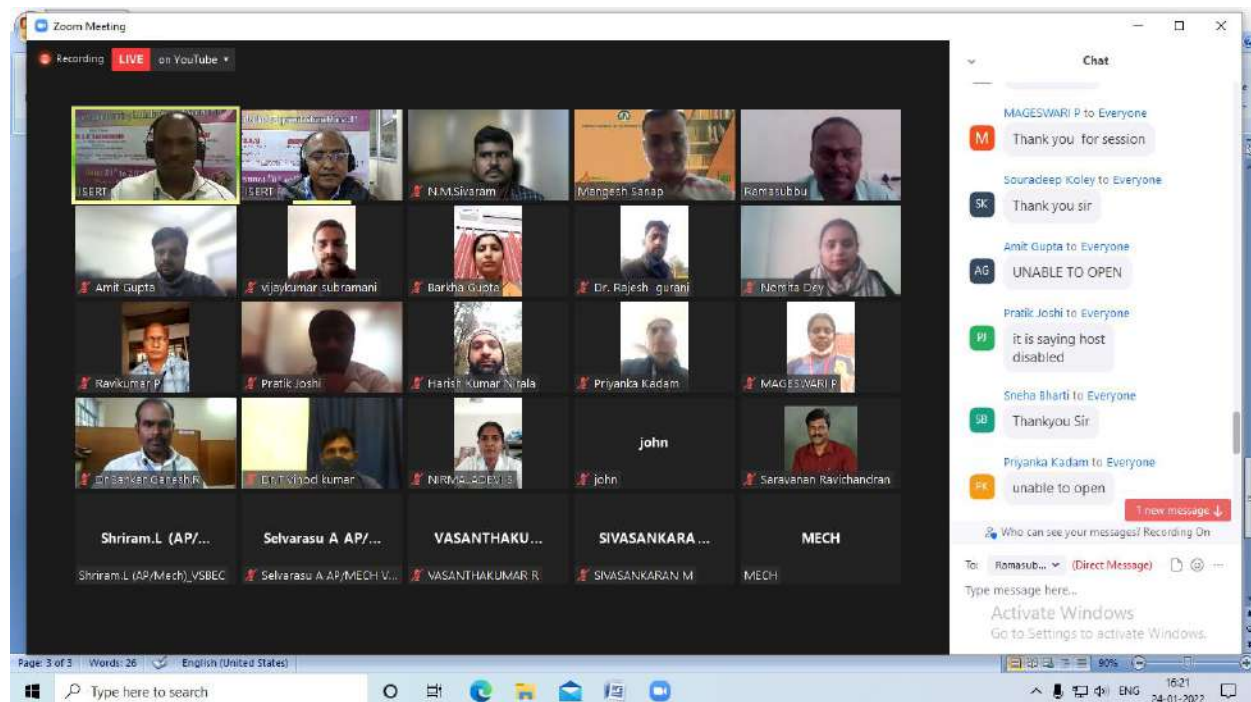
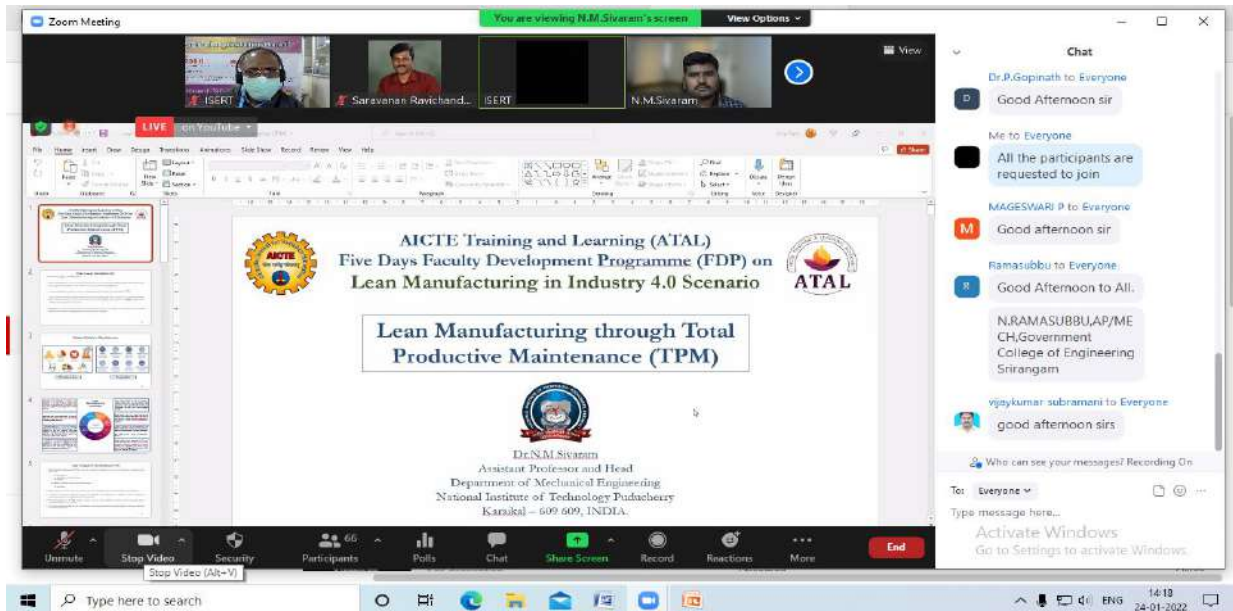
- 1. Specifying Value:** Value can only be defined by the ultimate customer. "Value is only meaningful when expressed in terms of a specific product or service which meets the customer needs at a specific price at a specific time."
- 2. Identify and create value streams:** "A value stream is all the actions currently required to bring a product from raw materials into the arms of the customer." The diagram shows "In House Processes" and "Customer".
- 3. Making value flow:** "Products should flow through a lean organisation at the rate that the customer needs them, without being caught up in inventory or delayed."
- 4. Pull production not push:** "Only make as required. Pull the value according to the customer's demand."
- 5. Striving for perfection:** "Perfection does not just mean quality. It means producing exactly what the customer wants, exactly when the customer requires it, at a fair price and with minimum waste."

The video player shows it is a live stream with 3 viewers. The top chat area contains a welcome message and several participant comments. The YouTube interface includes search, navigation, and social sharing options.

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24.1.2022 Day 1 Session 3, 2 p.m. to 4 p.m.

Dr N.Sivaram, Assistant Professor and Head, Department of Mechanical Engineering,
NIT Pudhuchery, Karikal.



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25.1.2022 Day 2 Session 1, 9 a.m to 11 a.m.

Dr.S.Vinoth, Associate Professor, Department of Production Engineering, NIT-Tiruchi.

• WHAT IS VALUE STREAM?

- Value stream in a manufacturing environment can be described as product production from order taking to delivery to the customer, and collecting money from him for the same.

```

    graph TD
      VS[Value stream] --- CVA[Activities adding value to the customer (CVA)]
      VS --- AN[Activities necessary]
      VS --- W[Activities not adding value to the customer (waste)]
  
```

The diagram shows a central box labeled "Value stream" connected to three boxes below it: "Activities adding value to the customer (CVA)", "Activities necessary", and "Activities not adding value to the customer (waste)".

The 5S's

Japanese Term	Meaning	Description
Seiri	Sort Out	Separate out the things that are used and remove the things that are not used from the working environment
Seiton	Set In Order	Arrange necessary items in proper order so that they can be easily picked up for use
Seiso	Shine	Clean your workplace / surroundings thoroughly so that there is no dust on the floors / machines & equipment
Seiketsu	Standardize	Establish procedures & standards to maintain 5S and perform regular patrol to all areas & continually audit the 5S progress
Shitsuke	Sustain	Cultivate spirits of self discipline and self awareness to maintain, encourage and continue 5S activities and sustaining it with timely motivation, training and sharing of working results


Report on AICTE Training And Learning (ATAL) Online Faculty Development Programme On "Lean Manufacturing in Industry 4.0 Scenario" 24th to 28th January 2022.

Zoom Meeting

Anita Behra Shaman Gupta VP NANDAKUMAR V

Recording LIVE on YouTube

Set In Order



Before After

Participants (100)

Q, Find a participant

- RR RITU RAJ
- RR ROSHAN RATHOD
- SS S SIVAKUMARAVEL
- SS SAMEEM SUHA M
- SA SathyaPrakash Anekallu

Chat

malini sreenivas to Me (Direct Message)
MS is it waste?

Dr P.K.CHIDA... to Me (Direct Message)
DP IDEAL

Who can see your messages? Recording On

To: Devanathan C (Direct Message)

Type message by Windows
Go to Settings to activate Windows.

Type here to search

10:11 25-01-2022

Zoom Meeting

Mangesh Sanap Ramasubbu Vinodh S Sneha Bharti

Recording LIVE on YouTube

Value Stream Mapping

- VSM is a tool to visually indicate all actions required to bring about a product or service in logical steps from start to finish
- It shows all the actions required to complete a product or service through to the customer
- The purpose of VSM is to understand the value flow
- VSM helps in understanding how the product flows from when the customer orders to the dispatch of the product to the customer
- It helps to identify the steps that add value to the customer and do not add value to the customer

Participants (100)

Q, Find a participant

- SR SELVENDRAN R
- SG Shaman Gupta
- SB Sharjyn Bangera
- SP Shital Patel
- SM SIVASANKARAN M

Chat

MS how far 5S is realised in Indian industry, means to what extent

SELVENDRAN R to Me (Direct Message)
SR CLEAR SIR

Who can see your messages? Recording On

To: Devanathan C (Direct Message)

Type message by Windows
Go to Settings to activate Windows.

Type here to search

10:38 25-01-2022

Report on AICTE Training And Learning (ATAL) Online Faculty Development Programme On "Lean Manufacturing in Industry 4.0 Scenario" 24th to 28th January 2022.

Zoom Meeting
Recording **LIVE** on YouTube

Participants (94)

Q, Find a participant

- SB Sharyn Bangera
- SP Shital Patel
- SM SIVASANKARAN M
- SB Sneha Bharti
- SK Souradeep Koley

Invite **Mute All**

Chat

Me to Vinodh S (Direct Message)
remaining 5 minutes

Ramasubbu to Me (Direct Message)
Very useful presentation sir

Who can see your messages? Recording On

To: Vinodh S (Direct Message)

Type message windows
Go to Settings to activate Windows.

11:00 25-01-2022

Zoom Meeting
Recording **LIVE** on YouTube

Participants (93)

Q, Find a participant

- SB Sharyn Bangera
- SP Shital Patel
- SM SIVASANKARAN M
- SB Sneha Bharti
- SK Souradeep Koley

Invite **Mute All**

Chat

R Very useful presentation sir

D Dr.A.Balamuru... to Me (Direct Message)
sorry sir i dont have camera facility.

Who can see your messages? Recording On

To: Vinodh S (Direct Message)

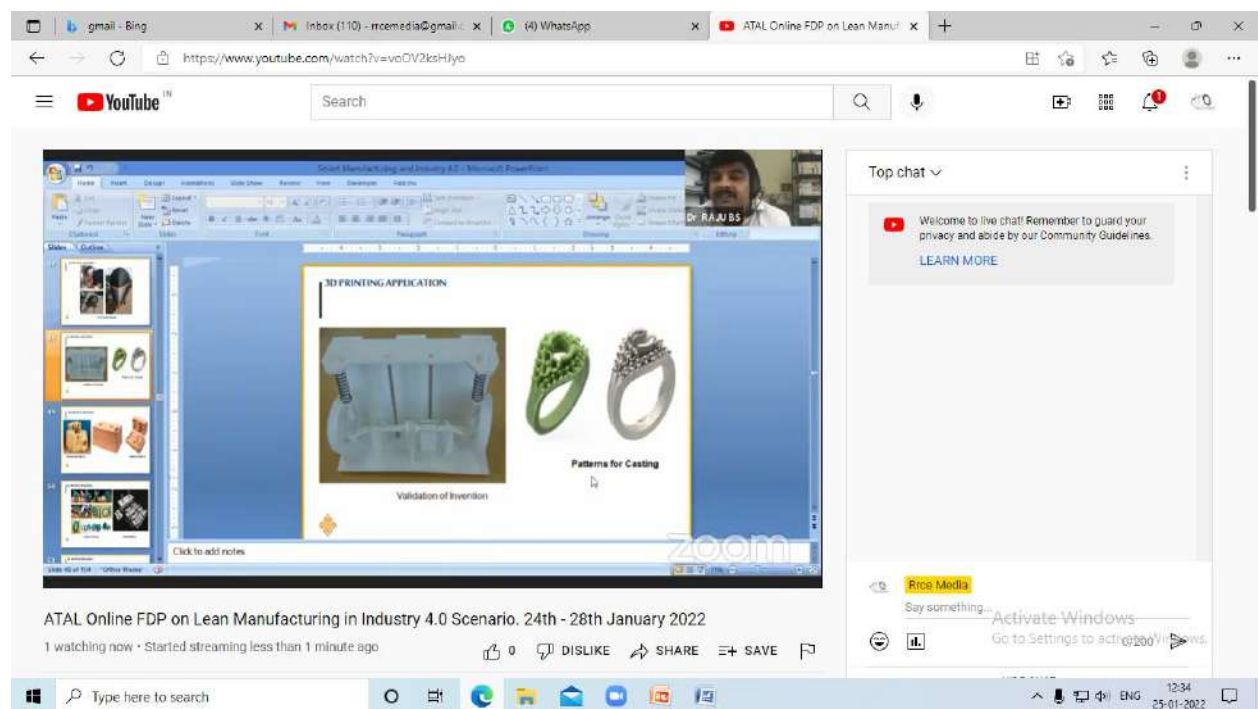
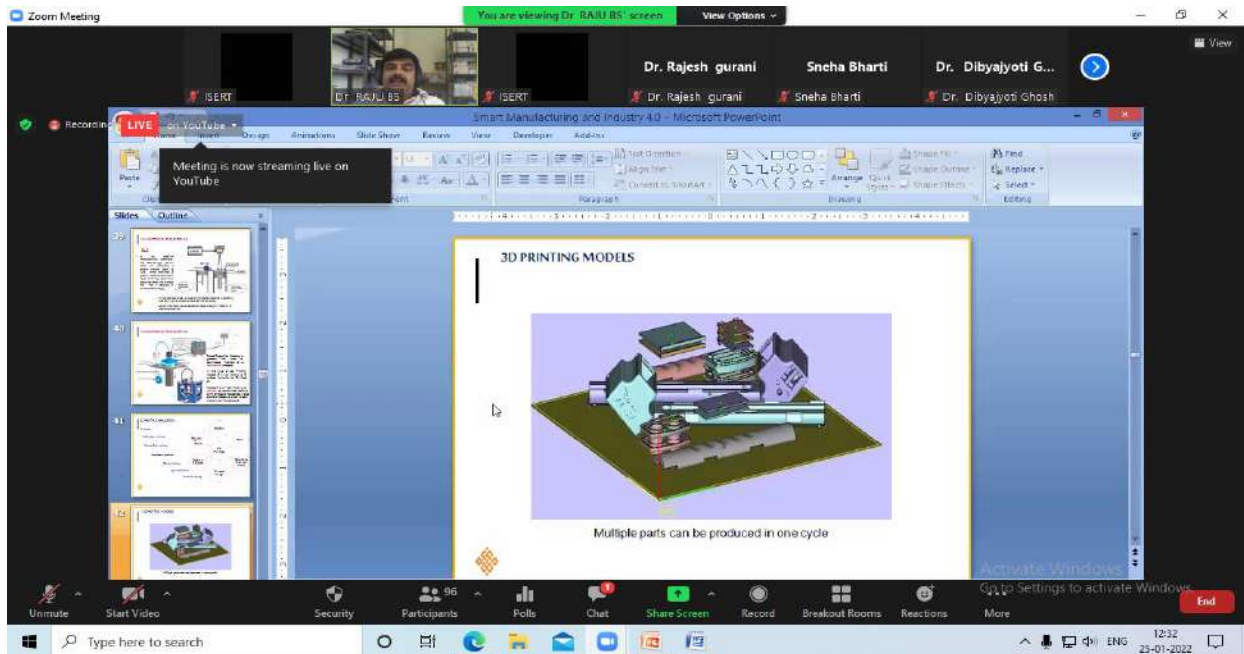
Type message windows
Go to Settings to activate Windows.

11:01 25-01-2022

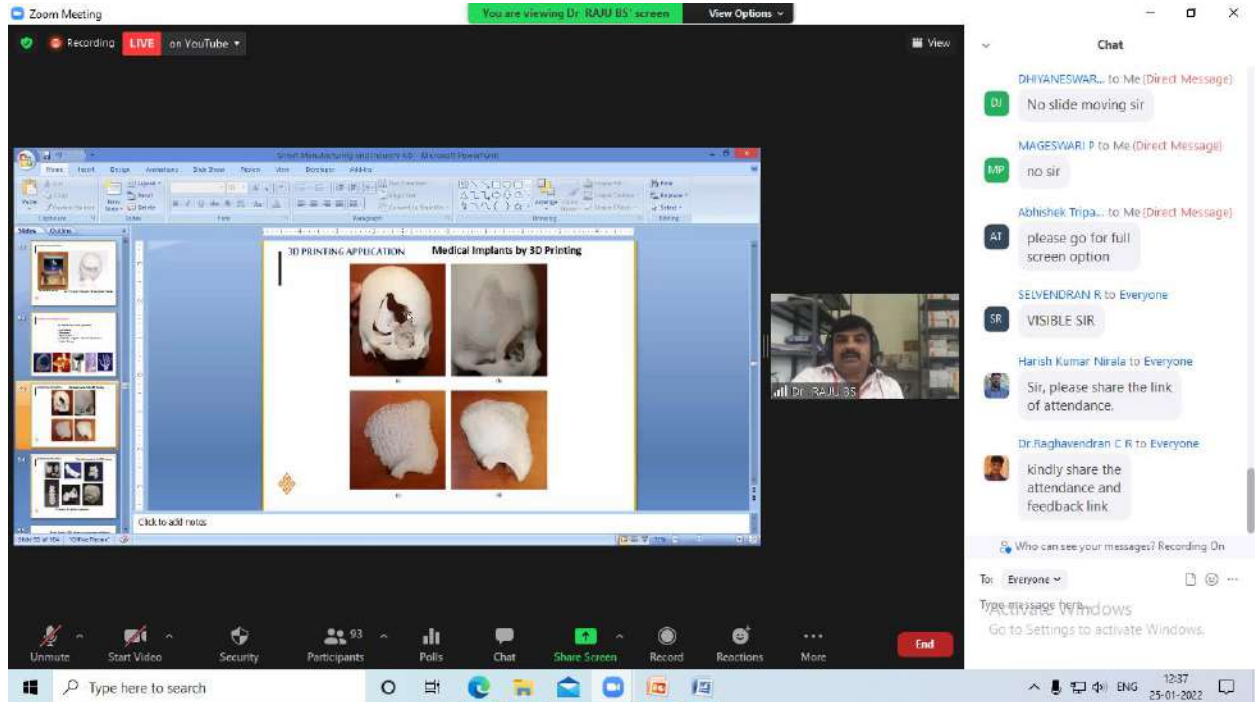
**Report on AICTE Training And Learning (ATAL) Online Faculty Development Programme
On "Lean Manufacturing in Industry 4.0 Scenario" 24th to 28th January 2022.**

25.1.2022 Day 2 Session 2 11.15 a.m. to 1.15 pm

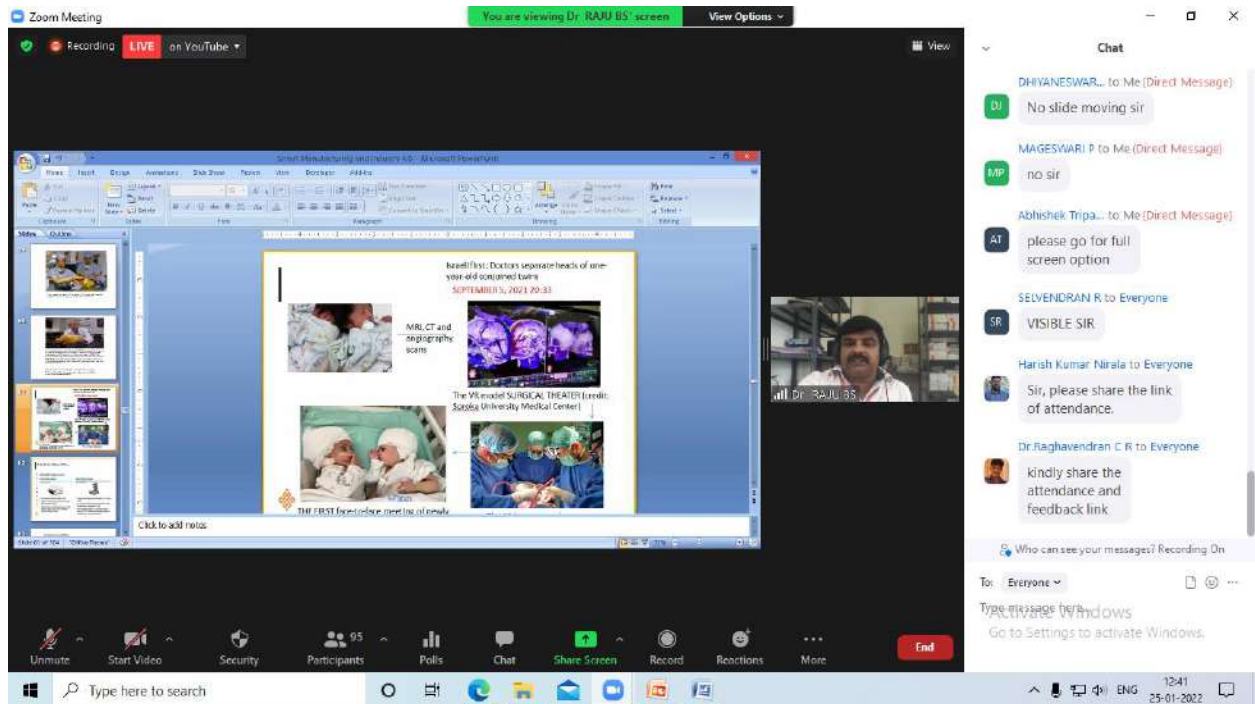
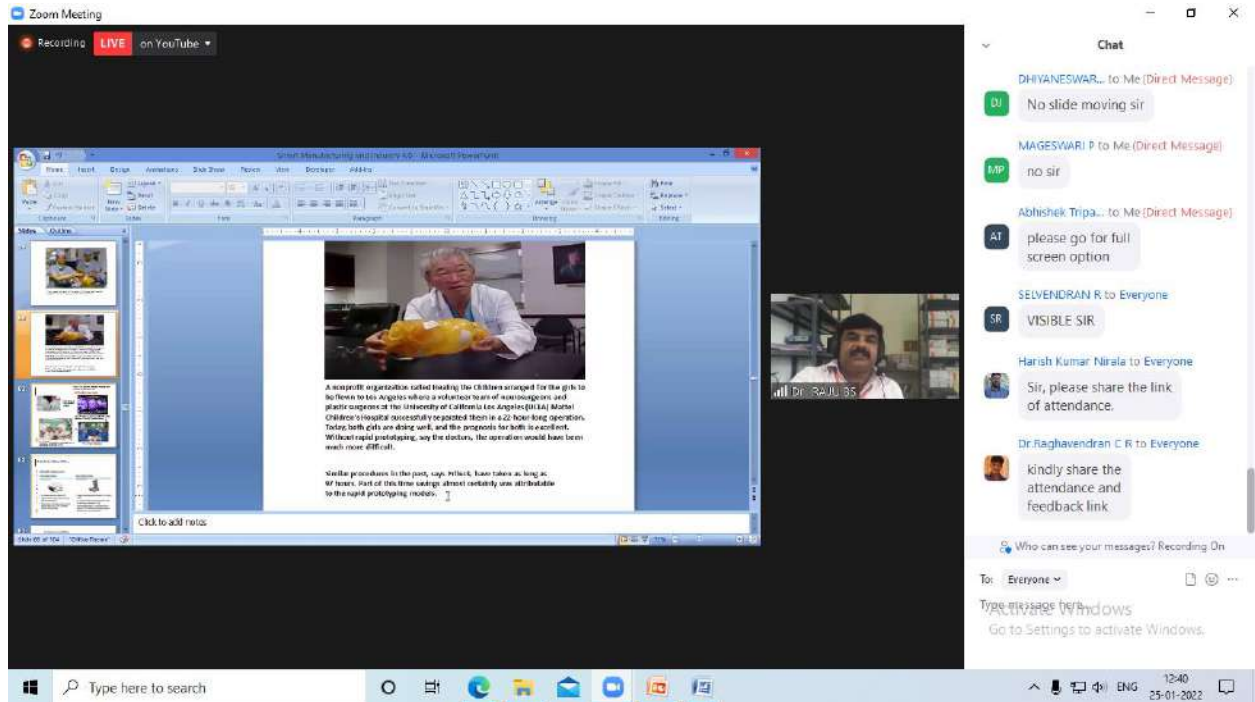
**Dr Raju B S, Professor and Special Officer (Evaluation), Department of Mechanical
Engineering, REVA University, Bengaluru**



Report on AICTE Training And Learning (ATAL) Online Faculty Development Programme On "Lean Manufacturing in Industry 4.0 Scenario" 24th to 28th January 2022.



Report on AICTE Training And Learning (ATAL) Online Faculty Development Programme On "Lean Manufacturing in Industry 4.0 Scenario" 24th to 28th January 2022.



**Report on AICTE Training And Learning (ATAL) Online Faculty Development Programme
On "Lean Manufacturing in Industry 4.0 Scenario" 24th to 28th January 2022.**

25.1.2022 Day 2 Session 3, 2 to 4 p.m.

**Mr. Subbiah Ranganathan Engr. S.R.Nathan, Director, Azure Management Counsultancy
FZ LLC, UAE**

The screenshot shows a Zoom meeting window with a shared Excel spreadsheet. The spreadsheet is titled "Basis of Objective Measurement" and contains the following data:

S.No	Objective	Basis	Document/Record (to be referred)	Verified by
10	No. of Kaizen / Suggestions	Number of acceptable continual improvements proposed	IMS-F-73	QHSE Director & MA
11	5S- Rating	5 S Assessment done with the 5S Assessment Format	IMS-F-71	QHSE Director & MA

Additional information from the spreadsheet includes: Dept.: QHSE (UCC), Date: 12.02.2020, and Format No. Doc. No.: IMS-F-14b, Issue No.: 1.1, Issue Date: 01.10.2018. The spreadsheet also shows fields for "Prepared by:" and "Approved by:".

The screenshot shows a Zoom meeting window with a shared slide titled "11 Bottle Neck Analysis". The slide content includes:

- Text: "Nothing but Critical Path in the assembly line.."
- Diagram: A process flow diagram showing a bottleneck.
- Bar Chart: A bar chart titled "Bottleneck Analysis" showing cycle times for processes A, B, C, and D. The y-axis is "Cycle Time sec/cycle" and the x-axis is "mikumiharaniya.com". The cycle times are: A (40), B (45), C (35), and D (30). Process B is highlighted as the "Bottleneck Process Highest Cycle time".
- Text: "Takt Time 50 sec/unit"

**Report on AICTE Training And Learning (ATAL) Online Faculty Development Programme
On "Lean Manufacturing in Industry 4.0 Scenario" 24th to 28th January 2022.**

The screenshot shows a Zoom meeting window with a slide titled "18. Visual Management". The slide content includes:

- 18. Visual Management**
- Good Visual Management Board should match the 31-second rule:
 - **In 1 second**, to understand the status
Normally : **Red**-Not met the target(Achieved less than 70% of the Target), **Yellow**- Achieved only -70 to 90% of the target & **Green**- Achieved More than 90% of the target)
 - **In 10 seconds**, to understand the nature of the achievement/failure.
 - **In 20 seconds**, to understand what action to be taken, who is responsible to take action and when need to be completed.

The slide also features a photograph of a factory floor with a visual management board and the Azure logo. The Zoom interface shows participants: Sany Priyanka D., Subbiah Ranganathan, Dr.T.Vinod kumar, Sneha Bharti, and Dr. M.Durairaj. A "Recording LIVE on Youtube" indicator is present.

This is a duplicate of the screenshot above, showing the same Zoom meeting window and slide content for "18. Visual Management".

Report on AICTE Training And Learning (ATAL) Online Faculty Development Programme On "Lean Manufacturing in Industry 4.0 Scenario" 24th to 28th January 2022.

This screenshot shows a Zoom meeting interface during a Slido poll. The poll title is "Students feedback" and it contains four questions:

- Question 1: "What is the Average successful percentage rate of implementing this lean tool in your company ? Sir" (0 likes)
- Question 2: "Isn't time frame leads to incomplete product development" (0 likes)
- Question 3: "is the visual ... result in all areas" (0 likes)
- Question 4: "Informative session by Speaker" (0 likes)

Additional elements visible include a QR code for joining via Slido.com (#815 491), a "Recording LIVE on YouTube" indicator, and a "From Mangesh Snap to Everyone" notification. The Zoom meeting controls at the bottom show 94 participants and various interactive options like Polls, Chat, and Share Screen.

This screenshot shows a Zoom meeting displaying a presentation slide for Azure Management Consultancy FZ LLC. The slide features the company logo and the text: "Providing Range of Management Systems Consultancy & Business Solutions" and "WE OFFER THE BEST CONSULTANCY ADVICE FOR YOUR ORGANIZATION". It also includes a "SUPPORT" diagram and a list of services under "Our Expertise".

Overlaid on the right side of the meeting is a chat window with the following messages:

- MIBALAKUMAR to Everyone: "Very Good Presentation and Informative"
- Me to Everyone: "Day 2 session 3 Attendance link <https://forms.gle/wbvgg2MCA75LdDyY8>"
- SAMEEM SLIHA M to Everyone: "Thank you for this valuable session sir"
- Me to Everyone: "Day 2 Feedback link <https://forms.gle/e7zgho835VHtrmCA>"
- Summary message: "All the participants are requested to give 3rd session attendance and feedback"

The Zoom interface at the bottom shows 92 participants and a recording status of "Recording On".

**Report on AICTE Training And Learning (ATAL) Online Faculty Development Programme
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26.1.2022 Day 3 Session 1, 9 a.m. to 11 a.m.

Dr.S.Vinodh, Associate Professor, Department of Production Engineering, NIT-Tiruchi.

The screenshot shows a Zoom meeting interface. The main content is a slide with the following text:

Lean Manufacturing and Industry 4.0

Dr.S.Vinodh
Associate Professor
Department of Production Engineering
National Institute of Technology
Tiruchirappalli- 620 015
Email: vinodh@nit.edu

The Zoom interface includes a top bar with participant names (Amit, Abhishek Tripathi, Vinodh S), a recording indicator, and a participant list on the right with 49 participants. A chat window is open on the right with a message from VASANTHAKUMAR R to Everyone: "Good Morning and Happy Republic Day to All".

The screenshot shows a Zoom meeting interface. The main content is a slide with the following text:

VISUAL WORKPLACE

- Visual boards showing data required by project teams must be depicted
- Visual information helps the teams to understand project plan, achievement and targets
- These can be online information on a computer, electronic boards or any other visual media

The Zoom interface includes a top bar with participant names (Abhishek Tripathi, Vinodh S, Tamilselvan N), a recording indicator, and a participant list on the right with 70 participants. A chat window is open on the right with a message from R.Saravanan, AP/Mech, KIT-Kalaignar Karunanidhi Institute of technology, Coimbatore: "Good morning to all. This is R.Saravanan, AP/Mech, KIT-Kalaignar Karunanidhi Institute of technology, Coimbatore."

Report on AICTE Training And Learning (ATAL) Online Faculty Development Programme On "Lean Manufacturing in Industry 4.0 Scenario" 24th to 28th January 2022.

Zoom Meeting | You are viewing Vinodh S' screen | View Options

Participants: Vinodh S, Sneha Bharti, john

Industry 4.0 Six Design Principles

- ▶ **Interoperability:** the ability of **cyber-physical systems** (i.e. work piece carriers, assembly stations and products), humans and Smart Factories to connect and communicate with each other via the **Internet of Things** and the **Internet of Services**
- ▶ **Virtualization:** a virtual copy of the Smart Factory which is created by linking sensor data (from monitoring physical processes) with virtual plant models and simulation models
- ▶ **Decentralization:** the ability of **cyber-physical systems** within Smart Factories to make decisions on their own
- ▶ **Real-Time Capability:** the capability to collect and analyze data and provide the insights immediately
- ▶ **Service Orientation:** offering of services (of **cyber-physical systems**, humans and Smart Factories) via the **Internet of Services**
- ▶ **Modularity:** flexible adaptation of Smart Factories for changing requirements of individual modules

Zoom Meeting Controls: Unmute, Start Video, Security, Participants (77), Polls, Chat, Share Screen, Record, Reactions, More, End

Windows Taskbar: Type here to search, 09:38 26-01-2022

Participants (77): ISERT (Host, me), Vinodh S (Co-host), ISERT (Co-host), A JHONCY, Abhishek Tripathi

Chat: Day 3 Session 1 attendance link <https://forms.gle/gp5J58E863bZtlWa6>, Attendance closes at 9.40 am

Zoom Meeting | You are viewing Vinodh S' screen | View Options

Participants: bharti yadav, Sneha Bharti, Shirram Laksh..., ARUMUGAM K, Dr.Satheesha v

Bottleneck analysis for the manufacturing line

Total cycle time	66 min
Process lead time	14.6 days = 14.6 × 24 × 60 = 21,024 min
VA ratio	66/21,024 = 0.31%

Zoom Meeting Controls: Unmute, Start Video, Security, Participants (81), Polls, Chat, Share Screen, Record, Reactions, More, End

Windows Taskbar: Type here to search, 10:21 26-01-2022

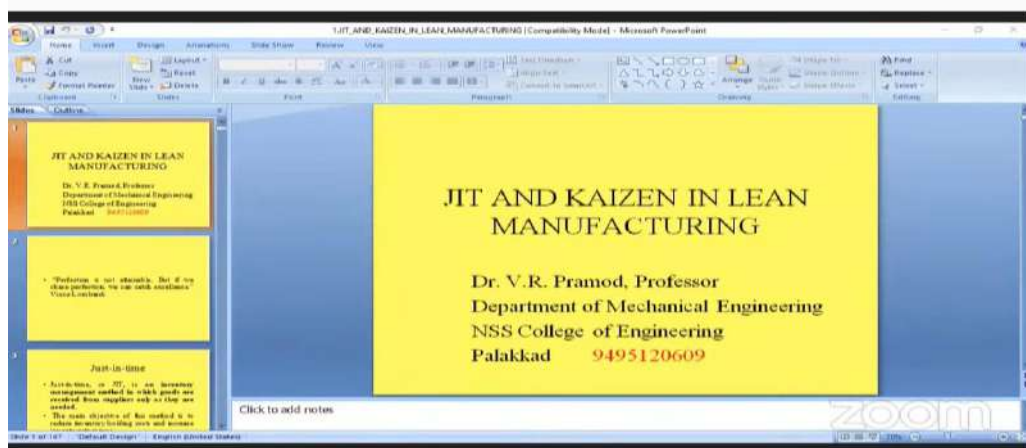
Participants (81): Mr G KIRUBAKARAN, NANDAKUMAR V, Neeraj Sharma, NIRMALADEVI S, NITHYA N

Chat: industry how you can implement lean practices?, Shivalingiah.K to Everyone, thank you very much

**Report on AICTE Training And Learning (ATAL) Online Faculty Development Programme
On “Lean Manufacturing in Industry 4.0 Scenario” 24th to 28th January 2022.**

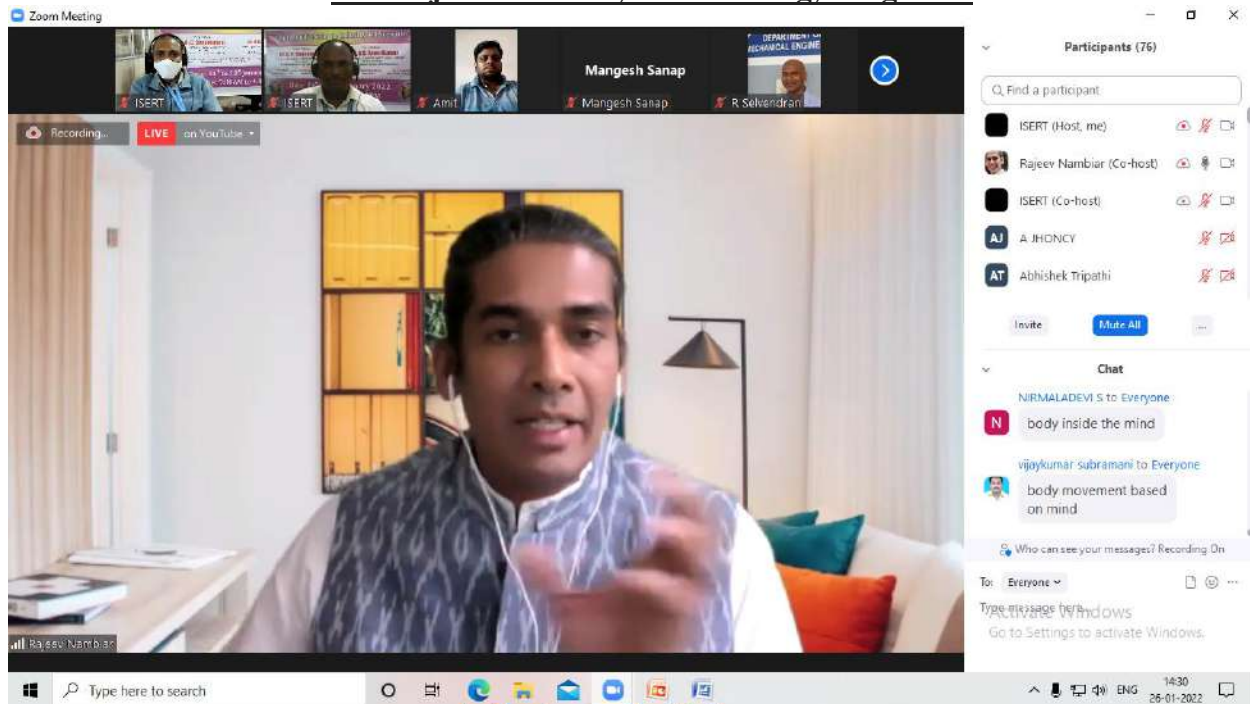
26.1.2022 Day 3 Session 2, 11.15 a.m. to 1.15 p.m.

Dr.V.R.Pramod, Professor, Department of Mechanical Engineering, NSS College of Engineering, Palakkad.



26.1.2022 Day 3 Session 3, 2.00 p.m. to 4.00 p.m.

Mr. Rajeev Nambiar, Art of Living, Bengaluru



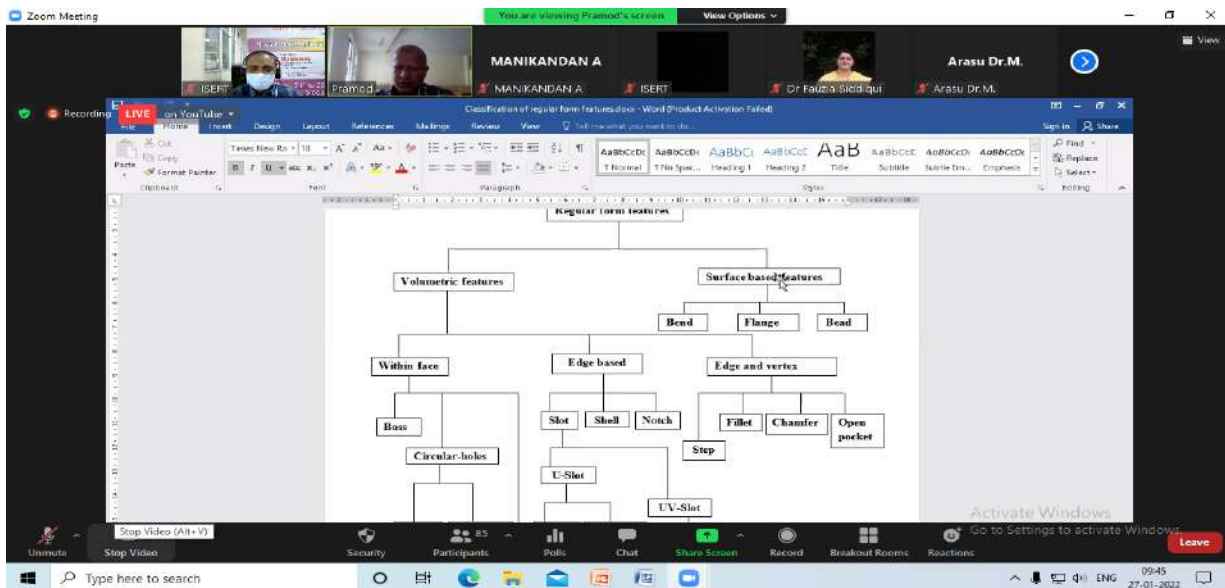
Report on AICTE Training And Learning (ATAL) Online Faculty Development Programme On "Lean Manufacturing in Industry 4.0 Scenario" 24th to 28th January 2022.



**Report on AICTE Training And Learning (ATAL) Online Faculty Development Programme
On “Lean Manufacturing in Industry 4.0 Scenario” 24th to 28th January 2022.**

27.1.2022 Day 4 Session 1, 9 a.m. to 11.00 a.m.

**Dr. Pramodkumar S K, Associate Professor, Department of Mechanical Engineering, REVA
University, Bengaluru**



Report on AICTE Training And Learning (ATAL) Online Faculty Development Programme On "Lean Manufacturing in Industry 4.0 Scenario" 24th to 28th January 2022.

Zoom Meeting | You are viewing Pramod's screen | View Options

Recording LIVE on YouTube

FEATURES RECOGNIZED

FACES	WITHIN FACE FEATURES	EDGE BASED FEATURES	EDGE AND VERTEX BASED FEATURES	SDV VF (mm ²)
Top face (+z direction)	circular hole	-	-	792.675
top face (+z direction)		-	-	
top face (+z direction)		-	-	
top face (+z direction)		-	-	
top face (+z direction)		-	-	
contour face (+x direction)	-	through slot	-	1512
contour face (-y direction)	-	through slot	-	6408
contour face (-x direction)	-	through slot	-	1512

Zoom Meeting controls: Unmute, Start Video, Security, Participants (87), Polls, Chat, Share Screen, Record, Reactions, More, Leave

Windows taskbar: Type here to search, ENG, 09:52, 27-01-2022

Chat

SELVENDRAN R to Everyone: S sir

Dr.Raghavendran C R to Everyone: kindly share the attendance link

Dr.Raghavendra... to Me (Direct Message): sure thank u

Recording LIVE on YouTube

EXPLODED VIEW

Zoom Meeting controls: Unmute, Start Video, Security, Participants (87), Polls, Chat, Share Screen, Record, Reactions, More, Leave

Windows taskbar: Type here to search, ENG, 09:52, 27-01-2022

Zoom Meeting controls: Unmute, Start Video, Security, Participants (87), Polls, Chat, Share Screen, Record, Reactions, More, Leave

MANIKANDAN A

MANIKANDAN A

Report on AICTE Training And Learning (ATAL) Online Faculty Development Programme On "Lean Manufacturing in Industry 4.0 Scenario" 24th to 28th January 2022.

Recording LIVE on YouTube

INDUSTRY 3.5 COMPUTER-AIDED PROCESS PLANNING

Idea Generation CAD CAPP CAM CNC

COOLANT / ON
COOLANT / OFF
SPINDL / 1800, CVW
FEEDRAT / 800, M80PM
TOOLNO / 10
INTOL / 30
OUTOL / 15
END

CAPP

- Feature Based
- Knowledge Based
- Neural Network
- Genetic Algorithm
- Fuzzy Set Theory/Logic
- Pertri Nets
- Agent Based
- Internet Based
- STEP-Compliant
- Functional Blocks

AI

MANIKANDAN A

MANIKANDAN A

Activate windows
Go to Settings to activate Windows.

Recording LIVE on YouTube

INDUSTRY 3.5 COMPUTER-AIDED PROCESS PLANNING

Idea Generation CAD CAPP CAM CNC

COOLANT / ON
COOLANT / OFF
SPINDL / 1800, CVW
FEEDRAT / 800, M80PM
TOOLNO / 10
INTOL / 30
OUTOL / 15
END

CAPP

- Feature Based
- Knowledge Based
- Neural Network
- Genetic Algorithm
- Fuzzy Set Theory/Logic
- Pertri Nets
- Agent Based
- Internet Based
- STEP-Compliant
- Functional Blocks

AI

MANIKANDAN A

MANIKANDAN A

Activate windows
Go to Settings to activate Windows.

**Report on AICTE Training And Learning (ATAL) Online Faculty Development Programme
On “Lean Manufacturing in Industry 4.0 Scenario” 24th to 28th January 2022.**

27.1.2022 Day 4 Session 2, 11.15 a.m. to 1.15 p.m.

**Dr.V.M.M.Thilak, Associate Professor, Department of Mechanical Engineering,
Nehru Institute of Engineering and Technology, Coimbatore**

INTRODUCTION

- Globalization has intensified competition.
- Modern customers to demand high quality products with in features at low price
- Modern manufacturing companies not only satisfy the customer also aggressive to delight them
- “Agile manufacturing” paradigm produce products with in features within a short period of time
- Ability to react quickly in accordance with the dynamic demand customers is named as ‘agility’

Zoom meeting interface showing participants: Dr. V.M.M.Thilak, Dr. Rajesh Gurani, and others. Zoom control bar at the bottom includes: Unmute, Stop Video (All-V), Security, Participants (85), Polls, Chat, Share Screen, Record, Breakout Rooms, Reactions, More, and End.

LEAN MANUFACTURING

- Several wastes like overproduction, delay in manufacturing and of defective products occur as the departments and humans v companies are not intensively networked
- Lean manufacturing term was popularized by James P. Womac machine that changed the world” (Yusuf & Adeleye, 2002).

Zoom meeting interface showing participants: Dr. V.M.M.Thilak, Dr. Fauzia Siddiqua, and others. Zoom control bar at the bottom includes: Unmute, Stop Video (All-V), Security, Participants (86), Polls, Chat, Share Screen, Record, Breakout Rooms, Reactions, More, and End.

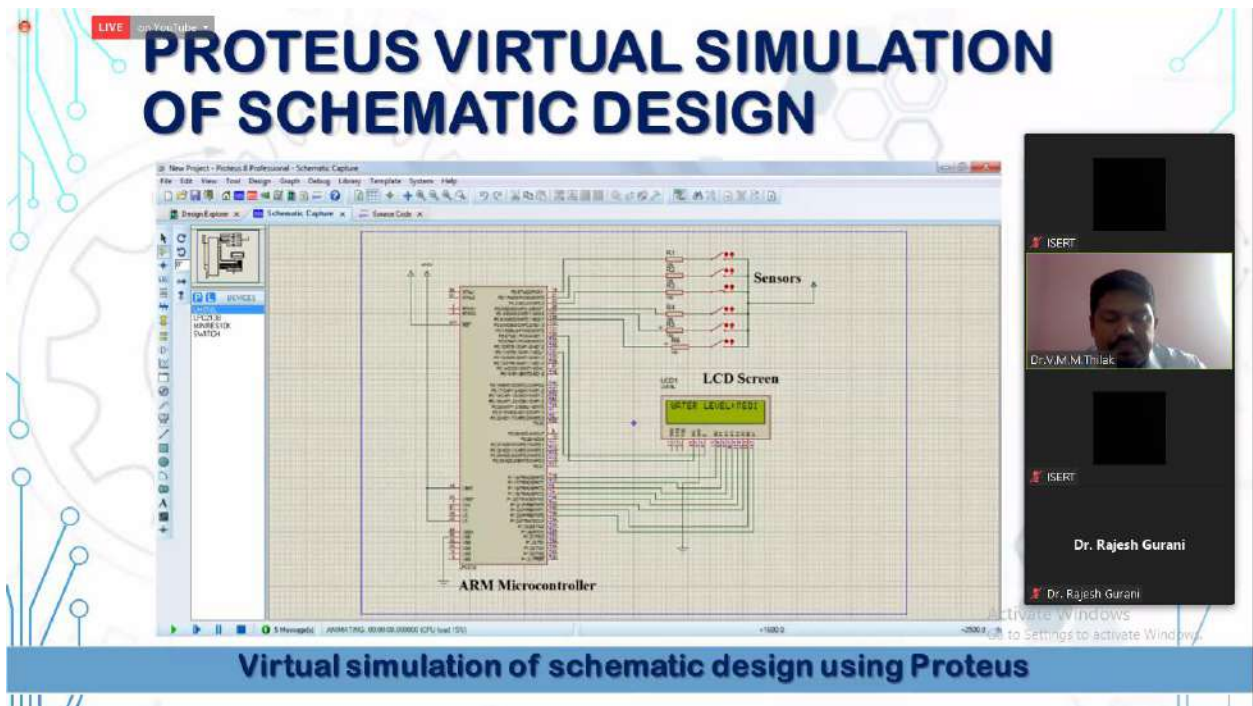
AGILITY IN PRODUCT DESIGN

- Functional features
- Ergonomic features
- Aesthetic features



Activate windows
Go to Settings to activate Windows.

PROTEUS VIRTUAL SIMULATION OF SCHEMATIC DESIGN



Virtual simulation of schematic design using Proteus

Activate windows
Go to Settings to activate Windows.

**Report on AICTE Training And Learning (ATAL) Online Faculty Development Programme
On "Lean Manufacturing in Industry 4.0 Scenario" 24th to 28th January 2022.**

27.1.2022 Day 4 Session 3, 2.00 p.m. to 4.00 p.m.

**Dr. Mahesh. V.M, Assistant Professor Department of Mechanical Engineering Sri
Jayachamarajendra College of Engineering, Mysuru.**

The screenshot shows a Zoom meeting interface. The main content is a slide titled "Historical development of Smart manufacturing". The slide features a timeline with four stages: Industry 1.0 (1784), Industry 2.0 (1870), Industry 3.0 (1969), and Industry 4.0 (TODAY). Each stage is represented by an icon and a brief description of its characteristics. The Zoom interface includes a top bar with participant names (ISERT, Dr. Mahesh V.M, Amit Gupta, ChaitanMaheshKhadwal) and a right-hand panel with a list of 64 participants and a chat window.

The screenshot shows a Zoom meeting interface. The main content is a slide titled "Industrial Internet of Things". The slide contains a bulleted list of points and an example sentence. The Zoom interface includes a top bar with participant names (Arasu Dr.M., Dr.Mahesh V.M., Saravanan Ravichand..., Shital Patel) and a right-hand panel with a list of 87 participants and a chat window.

Industrial Internet of Things

- At the heart of Industry 4.0 is the Internet of Things (IoT). Put simply, IoT refers to a network of physical devices that are digitally interconnected, facilitating the communication and exchange of data through the Internet.
- These smart devices could be anything from smartphones and household appliances to cars and even buildings.
- Industrial IoT is a subset of the Internet of Things, where various sensors, Radio Frequency Identification (RFID) tags, software and electronics are integrated with industrial machines and systems to collect real-time data about their condition and performance.

For example, IoT can be used to prevent the overstocking or understocking of inventory.

Report on AICTE Training And Learning (ATAL) Online Faculty Development Programme On “Lean Manufacturing in Industry 4.0 Scenario” 24th to 28th January 2022.

Augmented reality

- The manufacturing industry is just beginning to explore the benefits of Augmented Reality (AR) technology.
- Augmented reality bridges the gap between the digital and physical world by superimposing virtual images or data onto a physical object. For this, the technology uses AR-capable devices, such as smartphones, tablets and smart glasses
- In the context of manufacturing, AR could enable workers to speed up the assembly process and improve decision-making

Recording LIVE on YouTube

Arasu Dr. M.

Dr. Mahesh V. M.

Activate Windows
Go to Settings to activate Windows.

Applications of Agile Manufacturing

2. Using 3D Printing to Prototype Faster

3D printers have the potential to greatly accelerate designing and prototyping. Iterative cycles become shorter as new versions of products are tested in a fraction of the time. Indeed, new prototypes no longer need to be designed and manufactured in a process that can take months. Rather, they are simply printed and tried immediately. Products are thus tested early and often, and improvements are made with each version. The result: optimal end products that satisfy customer demands.

3. Using Computer Vision to Augment Operators

Computer vision systems can assist operators through a production process. These systems track the operator's movements and inspect the product as it is being made. Based on ongoing context analysis of the manufacturing environment, the computer provides assistance and performs the relevant quality checks. With computer vision, manufacturers can deliver a much greater array of products without sacrificing productivity or quality.

Zoom Meeting

Recording LIVE on YouTube

Participants (93)

Q, Find a participant

- ISERT (Co-host, me)
- ISERT (Host)
- Dr. Mahesh V. M (Co-host)
- AJ A Jhency
- AT Abhishek Tripathi
- Ambrish Singh
- AG Amit Gupta
- AP Anbarasu P
- AB Anita Behra
- AD Arasu Dr. M.
- AS ARUNKUMAR S
- Barkha Gupta
- DJ DHYANESWARAN J
- DA Dr. Anand Shankar DWS

Type here to search

ENG 15:33 27-01-2022

**Report on AICTE Training And Learning (ATAL) Online Faculty Development Programme
On "Lean Manufacturing in Industry 4.0 Scenario" 24th to 28th January 2022.**

28.1.2022 Day 5 Session 1, 9.00 a.m. to 11.00 a.m.

**Dr.A.Murugarajan, Professor and Head of Department of Robotics and Automation at Sri
Ramakrishna Engineering College, Coimbatore**

Recording LIVE on YouTube

Smart Sensors for Industry 4.0/Digital Manufacturing

Dr. A. Murugarajan Ph.D (IITM)
Professor and Head
Department of Robotics and Automation
Sri Ramakrishna Engineering College
Coimbatore-22

Five Days AICTE Training And Learning
Online Faculty Development Program
"Lean Manufacturing in Industry 4.0 Scenario"
24th - to 28th January 2022
RajaRajeswari College of Engineering, Bengaluru-560074.

Session 1 09.00am-11.00am Jan 28, 2022

Ramasubbu

Recording LIVE on YouTube

Smart Factory

You are viewing Dr. A. Murugarajan, SREC, Coimb... screen

[optimizing the complete value chain]

Dr.A. Murugaraj...

Dr.A. Murugarajan, SREC, Coimbatore...

Abhishek Tripathi

Unmute Stop Video Security Participants 83 Polls Chat Share Screen Record Breakout Rooms Reactions More End

Report on AICTE Training And Learning (ATAL) Online Faculty Development Programme On "Lean Manufacturing in Industry 4.0 Scenario" 24th to 28th January 2022.

Current Trend in sensors

- By 2020, somewhere from 26 to 50 billion "things" connected to the Internet.
- Cost of sensor technologies have declined 100X last 10 years.
- In the past three years, the number of sensors shipped has increased more than five times from 4.2 billion in 2012 to 23.6 billion in 2014.

Year	Number of Devices
1982	44
1986	300
1996	19,000,000
2010	2,300,000,000
2012	99% of all devices connected

"99% of all devices that could be connected aren't."
- John Chambers, CEO Cisco Systems

SREC / R&A/ Dr.AMR 12

Role of smart sensor in Industry 4.0

Smart Tasks:
Faster signal capture
Sensor-internal data processing
Decentralized signal analysis

Dr.Satheesha v
Shaman Gupta
Dr Karthikeyan M
Dr. Fauza Siddiqui

SREC / R&A/ Dr.AMR 33

**Report on AICTE Training And Learning (ATAL) Online Faculty Development Programme
On "Lean Manufacturing in Industry 4.0 Scenario" 24th to 28th January 2022.**

28.1.2022 Day 5 Session 2 11.15 a.m. to 12.15 p.m.

Mr. Ramaprakash Holla, MD, Distinct Productivity Solutions, Bengaluru.

Distinct Productivity Solutions

Industry 4.0 for Manufacturing Industry

Ramaprakash Holla
Distinct Productivity Solutions
A48, KSSIDC Industrial Estate, Kumbalagodu, Mysore Road Bangalore 560074
www.distinct.in
rpholla@distinct.in
Mob : 99455 33455

Participants (84)

- ISERT (Host me)
- Ramaprakash Holla (Co-host)
- ISERT (Co-host)
- A JHONCY
- Abhishek Tripathi

Chat

Day 5 Session 1 attendance link <https://forms.gle/1L6xX3uExdeXALZV6>

Unmute Stop Video (Alt-V) Security Participants Polls Chat Share Screen Record Reactions More

Agenda

- Introduction
- What is Lean ?
- What is Industry 4.0 ?
- Building Blocks of Industry 4.0
- Nature of an Ideal Industry 4.0 : 5C
- Example of an ideal Industry 4.0 Case
- Machine Monitoring Systems : My Machine
 - Andon
 - Real Time
 - Analytics
- Example of a Smart Factory : Fanuc Robot Factory in Japan
- Similarities & Differences between Lean and Industry 4.0
- Industry 4.0 : Is it future of Lean ?
- Conclusions
- Questions

Participants (84)

Unmute Start Video Security Participants Polls Chat Share Screen Record Breakout Rooms Reactions More

Report on AICTE Training And Learning (ATAL) Online Faculty Development Programme On "Lean Manufacturing in Industry 4.0 Scenario" 24th to 28th January 2022.

What is LEAN ?

- Lean manufacturing or Lean production is a systematic method of the elimination of waste within the manufacturing process
- Lean production is the economical and time efficient use of factors of production resources , personal, material, planning in the context of company activities.
- Lean is a permanent struggle to flow value to the customer
- The core idea is to maximize customer value while minimising waste
- Lean is a set of management practice based on the Toyota production

LEAN MANUFACTURING IS A WAY OF LIFE , IT IS A CULTURE

The screenshot shows a Zoom meeting interface. The main window displays a presentation slide titled "WHAT IS INDUSTRY 4.0 ?". The slide content is as follows:

1 st Revolution 1700	2 nd Revolution 1870	3 rd Revolution 1960	4 th Revolution 2011-?
Mechanization	Electrification	Automation	Digitalization
Mechanical Assemblies	Mechanical Assemblies	Mechanical Assemblies	Mechanical Assemblies
	E & Electronics	E & Electronics	E & Electronics
		IT & Automation Controls	IT & Automation Controls
			Connected IT & Cyber Physical Systems

A blue circle labeled "Digital Transformation" is positioned to the right of the slide. The Zoom interface also shows a participant list on the right with 89 participants, including Dr.Satheesha v, Dr Karthikeyan M, and others. The Windows taskbar at the bottom shows the time as 11:28 on 28-01-2022.

Report on AICTE Training And Learning (ATAL) Online Faculty Development Programme On "Lean Manufacturing in Industry 4.0 Scenario" 24th to 28th January 2022.

Zoom Meeting

Mr G Kirubakar... Amit Gupta

ISERT Rampakash Holla ISERT Mr G Kirubakaran, AP... Amit Gupta

LIVE on YouTube

FANUC ROBOT MANUFACTURING FACTORY, JAPAN

Participants (94)

Q, Find a participant

- ISERT (Host, me)
- RH Rampakash Holla (Co-host)
- ISERT (Co-host)
- AJ A JHONCY
- AT Abhishek Tripathi

Invite Mute All

Chat

attendance link
<https://forms.gle/iL6yX3uExdoXAL2V6>

NIRMALADEVI S to Me (Direct Message)
yes sir.

Who can see your messages? Recording On

To: Everyone

Type message windows
Go to Settings to activate Windows.

Type here to search

12:07 28-01-2022

Zoom Meeting

Mr G Kirubakar... Amit Gupta

ISERT Rampakash Holla ISERT Mr G Kirubakaran, AP... Amit Gupta

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FANUC ROBOT MANUFACTURING FACTORY, JAPAN

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To: Everyone

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Type here to search

12:09 28-01-2022

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28.1.2022 Day 5 Session 2 12.15 p.m. to 1.15 p.m

Dr. Nagaraja Jade, Senior CAE Engineer, SBD- NVH, Whirlpool of India, Pune

The screenshot shows a YouTube video player. The video title is "Principle of Lean Manufacturing". The content includes a diagram with two boxes: "Lean manufacturing" and "Removing waste", connected by a double-headed arrow. Below the diagram, there is a list of bullet points:

- The goal of practicing Lean manufacturing isn't simply to eliminate waste, it's to continuously deliver value to the customer.
- ◆ **5 Principles of Lean manufacturing**
- **Value:** Identify the value from the perspective of the customer and relates to how much they are willing to pay for products or services.
- **Map the Value Stream:** It involves analyzing the materials and other resources required to produce a product or service to identify waste and improvements.
- **Create flow:** Eliminate functional barriers and identify ways to improve lead time.
- **Establish a Pull system:** Lean manufacturing uses a *Pull* system instead of a *Push* system.
- **Perfection:** Lean manufacturing rests on the concept of continually striving for perfection via continued process improvements.

Below the video, the text reads: "ATAL Online FDP on Lean Manufacturing in Industry 4.0 Scenario. 24th - 28th January 2022". The video has 2 views and was streamed live on Jan 28, 2022. There are buttons for Like, Dislike, Share, and Save.

The screenshot shows a YouTube video player. The video title is "Lean Six Sigma". The content includes a list of bullet points:

- ◆ **Six Sigma**
- Six Sigma is a data-driven problem-solving methodology. Continuous process improvement with low defects is the goal of this method.
- Problem-solving in Six Sigma is done using the **DMAIC** framework.

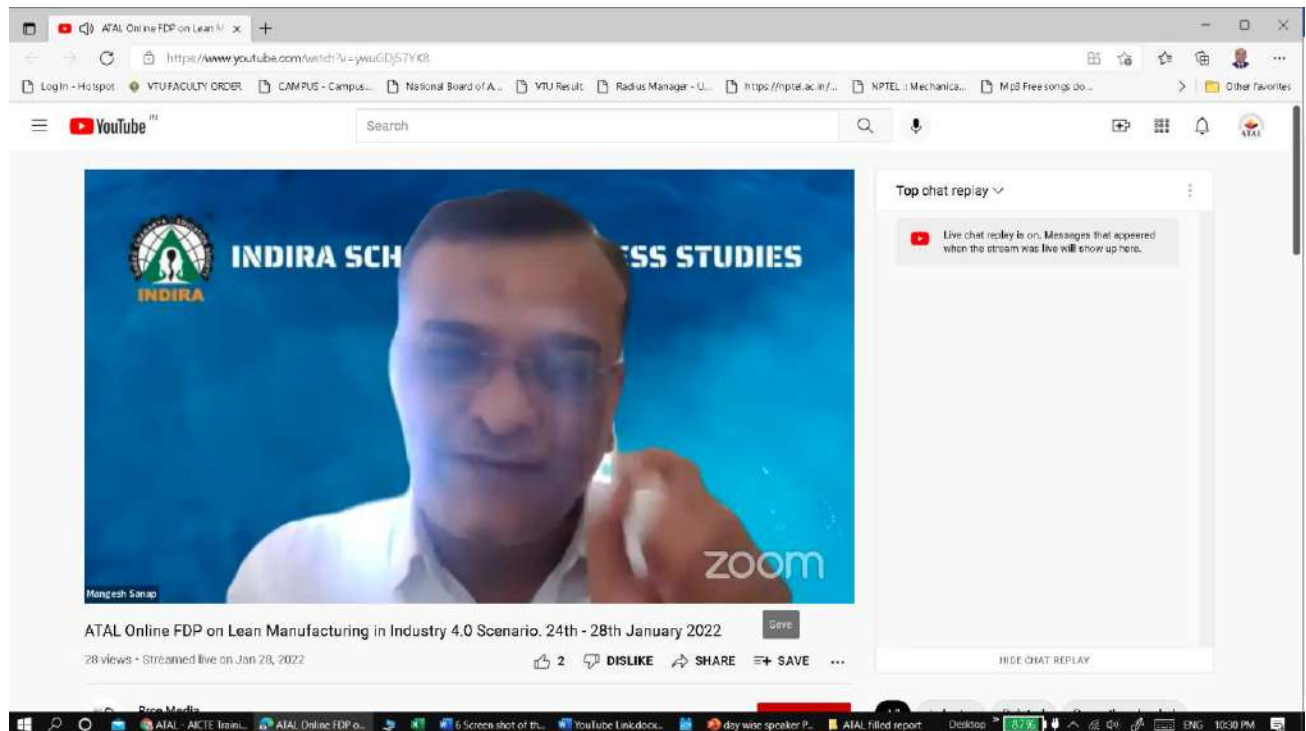
Below the text is a diagram of the DMAIC framework. It consists of five colored boxes in a row: Define (green), Measure (orange), Analyze (blue), Improve (red), and Control (teal). Above the boxes are three yellow boxes with text: "Define the problem and the objectives." above Define, "Analyze the process. Define factors of influence." above Analyze, and "Assure that improvements will sustain." above Control. Below the boxes are two yellow boxes with text: "What do we need to improve? Can we measure this?" below Measure, and "Identify and implement improvements." below Improve. A "zoom" watermark is visible in the bottom right corner of the video frame.

Below the video, the text reads: "ATAL Online FDP on Lean Manufacturing in Industry 4.0 Scenario. 24th - 28th January 2022". The video has 2 views and was streamed live on Jan 28, 2022. There are buttons for Like, Dislike, Share, and Save.

**Report on AICTE Training And Learning (ATAL) Online Faculty Development Programme
On “Lean Manufacturing in Industry 4.0 Scenario” 24th to 28th January 2022.**

28.1.2022 Day 5 Session 3 2.00 p.m. to 4.00 p.m

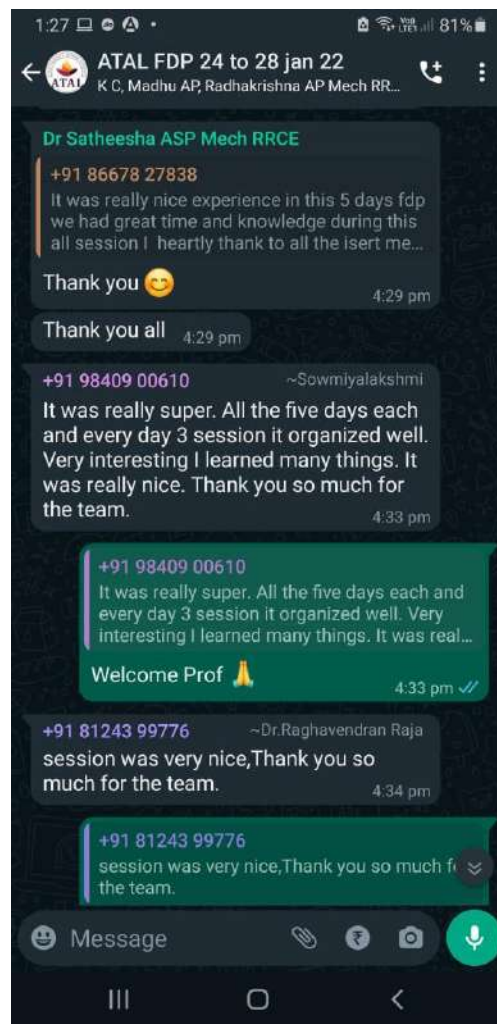
Valedictory function, Feed back session and Assessment Test



Feedback from the Participants about the Five Days AICTE Training And
Learning (ATAL) Online Faculty Development Programme
on

“Lean Manufacturing in Industry 4.0 Scenario”
24th - to 28th January 2022

FEEDBACK

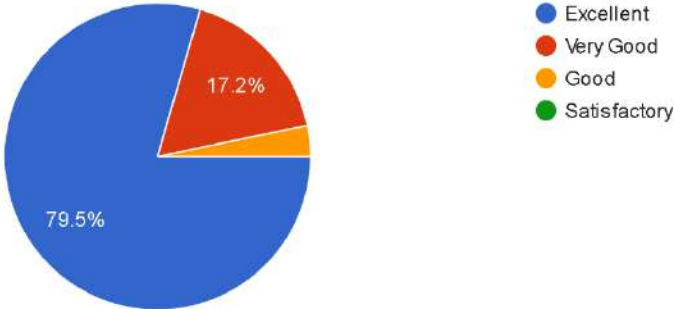


YouTube Link: <https://www.youtube.com/watch?v=ywuGDj57YK8>

FEEDBACK

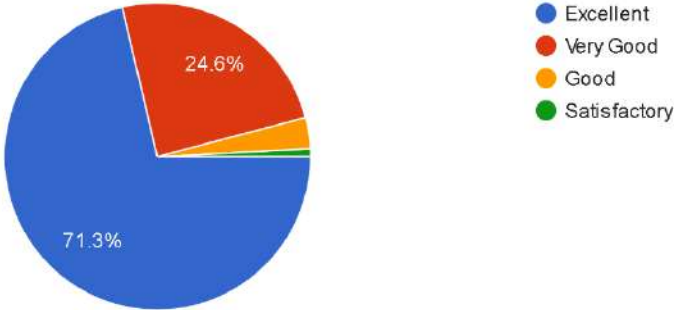
Presentation Skills and content of Resource Person

122 responses



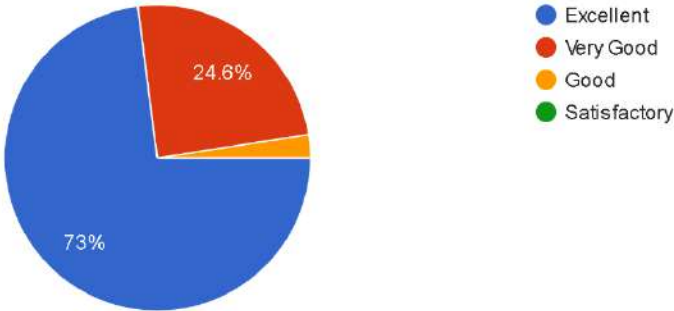
Significance of topic covered in FDP

122 responses



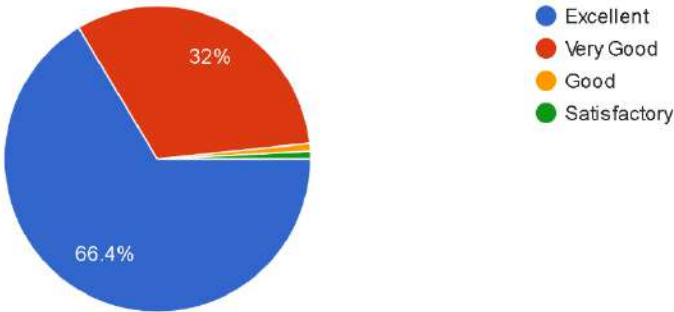
Organisation of The FDP

122 responses



How would you rate the session

122 responses



**Report on AICTE Training And Learning (ATAL) Online Faculty Development Programme
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**Recorded Sessions of YouTube Links of
AICTE Training And Learning (ATAL) Online Faculty Development Programme
On
“Lean Manufacturing in Industry 4.0 Scenario”24th to 28th January 2022.**

https://www.youtube.com/channel/UCy9JptooH3YR_WN4a6vwKDA)

Sl No	Day and Date	Session and Time	Topic	Speaker	YouTube Link
Day 1	Monday, 24 th January 2022	Session 1 9.00 a.m. to 11.00 a.m.	Fundamentals of Lean Manufacturing	Dr.S.R.Devadasan Professor, PSGCT, Coimbatore	https://youtu.be/GSCIMrEFoms
		Session-2 11.15 a.m. to 1.15 p.m	Lean Deployment in Industry Requirements	Dr.A.Murugarajan Professor, SREC, Coimbatore	https://youtu.be/tJwzyjxNAao
		Session-3 2.00 p.m. to 4.00 p.m	Lean Manufacturing through Total Productive Maintenance	Dr.N.M.Sivaram Assistant Professor, NIT-Karaikal	https://youtu.be/_Awo8at68g8
Sl No	Day and Date	Session and Time	Topic	Speaker	YouTube Link
Day 2	Tuesday, 25 th January 2022	Session 1 9.00 a.m. to 11.00 a.m.	Lean Tool Implementation	Dr.S.Vinoth Associate Professor, NIT-Tiruchi.	https://youtu.be/Y7zpvvMSqno
		Session-2 11.15 a.m. to 1.15 p.m	Smart Manufacturing -Industry 4.0	Dr. Raju B S Professor and Special Officer-Evaluation REVA University, Bengaluru.	https://youtu.be/voOV2ksHJyo
		Session-3 2.00 p.m. to 4.00 p.m	Case study on Lean Manufacturing	Engr. Subbiah Ranganathan Director, Azure Management Consultancy FZ LLC, UAE.	https://youtu.be/00CgnGvnckI


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Sl No	Day and Date	Session and Time	Topic	Speaker	YouTube Link
Day 3	Wednesday, 26 th January 2022	Session 1 9.00 a.m. to 11.00 a.m.	Lean Manufacturing- Industry 4.0	Dr.S.Vinoth Associate Professor, NIT- Tiruchi	https://youtu.be/lfOof7_1dLw
		Session-2 11.15 a.m. to 1.15 p.m	JIT and Kaizen in Lean Manufacturing .	Dr.V.R.Pramod, Associate Professor, NSSCE, Palakkad	https://youtu.be/Su9-n-bJsMw
		Session-3 2.00 p.m. to 4.00 p.m	Stress Management .	Mr. Rajeev Nambiar, Art of Living, Bengaluru	https://youtu.be/yVR31Frc2F8
Day 4	Thursday, 27 th January 2022	Session 1 9.00 a.m. to 11.00 a.m.	AI for Manufacturing	Dr Pramodkumar S K, Associate Professor, REVA University, Bengaluru	https://youtu.be/1zvpvRCdkqo
		Session-2 11.15 a.m. to 1.15 p.m	Industry 4.0 through Agile Manufacturing	Dr.V.M.M.Thilak Associate Professor, NIET, Coimbatore.	https://youtu.be/QSbWsp9EBpI
		Session-3 2.00 p.m. to 4.00 p.m	Smart Manufacturing	Dr.Mahesh.V.M Assistant Professor, SJCE, Mysuru.	https://youtu.be/P1Yfi2c7qOM

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Sl No	Day and Date	Session and Time	Topic	Speaker	YouTube Link
Day 5	Friday, 28 th January 2022	Session 1 9.00 a.m. to 11.00 a.m.	Smart Sensors for Industry 4.0 / Digital Manufacturing	Dr.A.Murugarajan, Professor, SREC, Coimbatore	https://youtu.be/6Js-LTCftVo
		Session-2 11.15 a.m. to 1.15 p.m	Industry 4.0	Mr.Ramaprakash Holla, Managing Director, Distinct Productivity Solutions, Bengaluru.	https://youtu.be/QSbWsp9EBpl
			Applications of Lean Manufacturing	Dr. Nagaraja Jade, CAE Engineer, SBD- in industries NVH, Senior Whirlpool of India, Pune.	https://youtu.be/ZBzZf07JZ3c
Day 5	Friday, 28 th January 2022	Session-3 2.00 p.m. to 4.00 p.m	Valedictory function, Feedback session.	-	https://youtu.be/vwuGDj57YK8


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 28/21-22
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END OF THE REPORT