



# A J INSTITUTE OF ENGINEERING AND TECHNOLOGY

NH-66, Kottara Chowki, Mangaluru -575006, Karnataka, INDIA

A Unit of Laxmi Memorial Education Trust®

(Approved by AICTE, New Delhi. Affiliated to Visveswaraya Technological University, Belagavi)

Accredited by NBA (BE: CV, CSE, ECE, ISE, ME)

## Memorandum of Understanding (MOU)

### Virtual Lab team (Centre for System Design), NITK

The Virtual Lab team in the CSD Department at the National Institute of Technology, Karnataka, is at the forefront of digitalizing laboratory education through innovative virtual solutions. On May 4, 2019, they signed an MOU with A. J. Institute of Engineering and Technology to integrate virtual lab practices into their curriculum, enhancing student internships and training.

#### Activity Details

Sl No.	Event	Year	Page No.
1	Virtual Lab Workshop	2019-20	2
2	Internship Project on Virtual Labs	2021-22	3
3	Virtual lab NITK SOLVE Visit	2023-24	5-7
4	Virtual lab NITK SOLVE Visit	2023-24	8-11
5	Virtual lab NITK SOLVE Visit	2023-24	12-15
6	Virtual lab NITK SOLVE Visit	2023-24	16-18

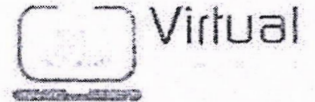
  
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A.J.Institute of Engineering & Technology  
Mangaluru - 575 006



# SOLVE the virtual labs at NITK Surathkal

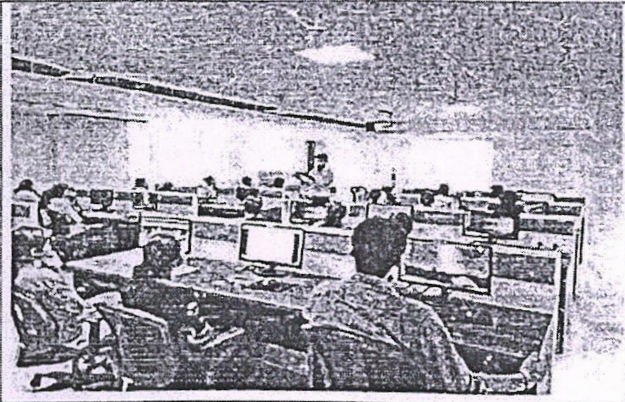
(An Initiative of Ministry of Human Resource & Development  
Under the National Mission on Education through ICT)

Participating Institute: National Institute of Technology Karnataka (NITK) Surathkal  
[www.vlab.co.in](http://www.vlab.co.in) or [www.vlabs.ac.in](http://www.vlabs.ac.in)



## Virtual lab workshop

Date	05-04-2019	
Institute Name	AJ Institute of Engineering and Technology, Mangalore	
Venue	AJ Institute of Engineering and Technology, Mangalore	
Resource Persons	Shreshtha, Akshaya, Anusha, Aishwarya Shetty, Aishwarya Hegde, Aquib A Nadaf	
Participants	Branch	Total number of Faculty and students attended
	ECE	62
	CSE	81
	ISE	37
Content Covered	Introduction on VLabs, V-Lab simulation, Remote trigger Lab, Hands-on. (Basic Electronics Lab, Hybrid Electronics Lab, Analog Signals Network and Measurement Lab, Digital Electronic Circuits Lab, Digital Signal Processing Lab, Virtual Electric Circuits Lab, Computer Aarchitecture & Organization Lab, Computer Organization Lab, Computer Programming Lab, Data Structures Lab, Image Processing Lab, Problem Solving Lab, SOM, MOM, Data structures, RT lab Vibration and SOM.)	



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Solve The Virtual Labs at Centre for System Design ,NITKSurathkal ,

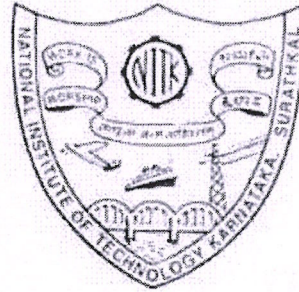


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An MoE Govt of India Initiative



## Certificate

This is to certify that **Mr. Manvith K** from **A. J. INSTITUTE OF ENGINEERING AND TECHNOLOGY, MANGALURU** has done his Internship Project work on

### 'Virtual Labs'

from **1st September 2021** to **30th September 2021** at Centre for System Design, NITK

**Dr. Pruthviraj U.**

**Coordinator for SOM & FM lab**

Surathkal.

**Principal**

**A.J. Institute of Engineering & Technology**  
**Mangaluru - 575 006**

**Dr. K. V. Gangadharan**

**Participating Institute Coordinator**



## Expression of Interest for setting up Virtual Labs' Nodal Centre (VLNC)

Name of the Institute: A J Institute of Engineering and Technology

Acronym of Institute: AJIET

Address: NH-66, Kottara Chowki, Mangaluru

Pin Code: 575006

Latitude: 12.915117

Longitude: 74.8286

Affiliated to: Visvesvaraya Technological University, Belagavi

Approved By (AICTE/UGC/University): AICTE

Approval Number: No.South-West/1-2846046191

AISHE Code: C-566446

### Branch of Engineering / Science

- a) Artificial Intelligence and Data Science
- b) Civil Engineering
- c) Computer Science and Engineering
- d) Computer Science and Engineering (AIML)
- e) Computer Science and Engineering (ICB)
- f) Electronics and Communication Engineering
- g) Information Science and Engineering
- h) Mechanical Engineering

### Number of Students

### Staff

63	1
114	11
317	18
62	1
62	1
236	19
241	15
157	17

Total: 1354

Total number of computers available for Virtual Labs use: 300

Internet bandwidth (in mbps): 150 Mbps

Name of the Principal: Dr. Shantharama Rai. C

Email: csrai@ajiet.edu.in

Mobile: 9480065081

Proposed Nodal Centre Coordinator (NCC): John Prakash Veigas

Email: john.veigas@ajiet.edu.in

Mobile: 9482038836

Department: Artificial Intelligence and Data Science

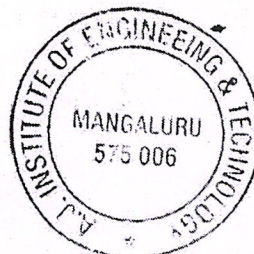
### It is certified that

- a) The institute is recognized by the AICTE/UGC.
- b) The institute has necessary and adequate infrastructure to host the Virtual Labs.
- c) Strict adherence to standard lab procedures and cyber security laws will be followed.
- d) Virtual Labs may withdraw/stop connectivity without giving any prior notice or reasons.
- e) This EOI for Virtual Labs usage is valid up to 31<sup>st</sup> December 2024 and requires renewal by the coordinating institute for continued support.

Signature & Stamp

Principal

A.J. Institute of Engineering & Technology  
Mangaluru - 575 006



Date: 17/1/2024

Principal

A.J. Institute of Engineering & Technology  
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Date: 22-12-2023

## Report on NITK SOLVE Virtual Lab Visit and Workshop

Name of the Program:	Visit to NITK Solve Virtual Lab	Program Dates & Timings:	21-12-2023 1:30pm-4:30pm
Name & Details of the Resource Person:	Mrs Shresta , Sr Research fellow, Centre for System Design NIT Karnataka, Surathkal Mr Manish - Research Scholar Mr. Sagar - Research Scholar		
Organized by (Clubs/ Dept.)	Virtual Lab Committee		
Number of Participants	Students	55	Faculty 2
Program Outcome (PO) Mapping	PO1, PO2, PO3, PO4, PO5		
Coordinator	Mr John Prakash Veigas		

### About the Program:

A Visit to Center for System Design :SOLVE Virtual Labs National Institute of Technology- Karnataka, Surathkal and Introductory workshop Virtual labs and System design demonstration is organized for the first-semester Artificial Intelligence and Data Science Students (F-Section) of A. J. Institute of Engineering and Technology. Resource person has given a hands-on demonstration of the virtual lab and briefed about the workshop and its benefits. Some experiments in the following virtual lab is demonstrated: Computer programming, Data Structures Lab, remote triggering lab etc.

Research scholars conducted a tour of ongoing studies in a variety of fields, including 3-D printing, laser cutting, electric vehicles with two and three wheelers, virtual reality, and unmanned aerial vehicles. Students are accompanied by Mr John Prakash Veigas, Assoc. Professor from AI & DS department and Mrs Suchitha.K from Physics department of AJIET.

**Objectives:** The program Virtual Lab awareness workshop enable students to

- To create awareness about Virtual lab
- To obtain practical hands on experience on different concepts
- To enthuse students to learn basic and advanced concepts through remote experimentation

**Outcomes:** On successful completion of program student should able to:

1. Tell about the virtual lab facility for remote access to lab resources
2. Illustrate practical hands on demonstration of different concepts
3. Apply basic and advanced concepts through remote experimentation

**Articulation Matrix:**

Course Outcomes	Program Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1	3				3							
2	3	2	2	2	3							
3	3	2	2	2	3							
Average	3	2	2	2	3							

**Photos:**

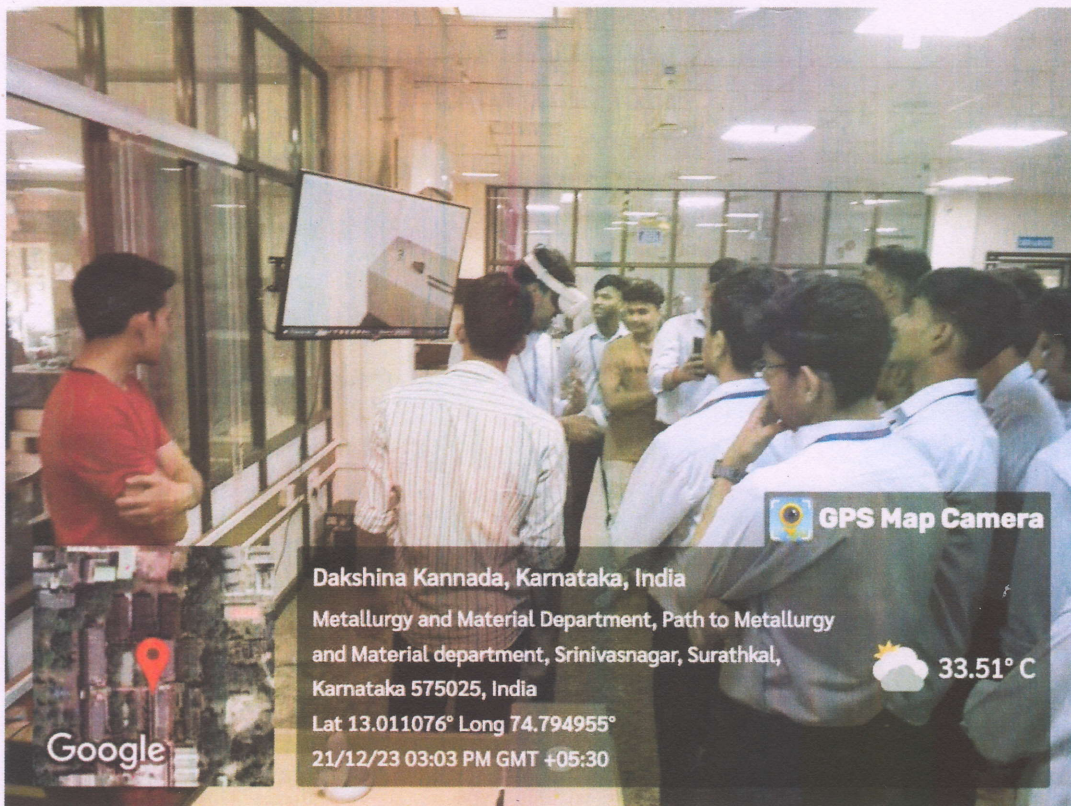


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Dakshina Kannada, Karnataka, India  
Combustions Lab, NITK Rd, Srinivasnagar,  
Surathkal, Karnataka 575025, India  
Lat 13.011301° Long 74.794993°  
21/12/23 02:41 PM GMT +05:30

33.51° C



Dakshina Kannada, Karnataka, India  
Metallurgy and Material Department, Path to Metallurgy  
and Material department, Srinivasnagar, Surathkal,  
Karnataka 575025, India  
Lat 13.011076° Long 74.794955°  
21/12/23 03:03 PM GMT +05:30

33.51° C

*John*  
Nodal Coordinator  
Mr John Prakash Veigas

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Principal  
A.J. Institute of Engineering & Technology  
Mangaluru - 575 006

Date: 23-12-2023

## Report on NITK Solve Virtual Lab Visit

Name of the Program:	Visit to NITK Solve Virtual Lab	Program Dates & Timings:	20-12-2023 9:00AM-1:00PM	
Name & Details of the Resource Person:	Prof. K.V. Gangadharan Ms. Shreshta, Senior Research Fellow Mrs. Vismaya, Senior Research Fellow Mr. Ruthvik, Junior Research Fellow Mr. Sumanth, Junior Research Fellow Mr. Ashutosh, Junior Research Fellow Mr. Poudhan, Junior Research Fellow Mr. Manish, Junior Research Fellow Mr. Neil, Junior Research Fellow			
Organized by (Clubs/ Dept.)	Virtual Lab Committee			
Number of Participants: 60	Stud ents:	58	Faculty:	02
Program Outcome (PO) Mapping	PO3, PO4, PO5, PO12			
Coordinator	Mr John Prakash Veigas			

### **About the Program:**

A hands-on awareness session was recently conducted at A J Institute of Engineering and Technology for first-semester Computer Science and Engineering students (IOT and Cyber security with Blockchain Technology). The session included a demonstration and insights into the advantages of virtual labs, highlighting the practical and educational benefits of the project. Initiated by the Ministry of Education in India, the Virtual Labs project revolutionizes ICT-based education by enabling remote experimentation.

**Objectives:** The program Virtual Lab awareness workshop enable students to

1. **Raise Awareness:** The Virtual Lab awareness workshop aims to inform students about the existence and benefits of Virtual Labs.
2. **Hands-on Experience:** Provide practical, hands-on experience to participants, allowing them to engage with various concepts covered in the Virtual Labs program.
3. **Inspire Learning:** Motivate students to explore both basic and advanced concepts by encouraging active participation in remote experimentation, fostering

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## About The Centre

Centre for System Design (A Centre of Excellence at NITK Surathkal) envisages an interdisciplinary approach and means for realization of successful engineering systems. Key components for this are system modeling & simulation, understanding system dynamics, system optimization, virtual and physical experimentation. The Centre aims at facilitating and providing required environment for all the key components of system design. Modern engineering problems are comprised of elements from all the traditional disciplines and these elements must be integrated to meet the overall design objectives. The Centre focuses on how to address and solve problems that transcend traditional boundaries.

The following experiments are demonstrated in the lab:

### Remote Triggered Labs

Remote Triggered Virtual Labs on Vibrations and Strength of Materials are hosted by this Centre. These labs contain experiments on the said topics which can be controlled over the internet to perform and obtain experimental results which are typically done in physical labs of engineering colleges.

### 3D Printer

The Centre has rapid prototyping facility using which 3D models (designed in CAD software) can be printed. The material used for such prototyping is ABS. For further details about 3D printing please use the web form on Contact page.

### Data Acquisition Systems

A variety of Data Acquisition Systems (C-DAQ, Compact-RIO, PXI) from National Instruments are available in this Centre which can cater to requirements such as large throughput, high sampling rate, FPGA etc. For specific details please use web form on Contact page.

A computer aided three-dimensional interactive application design was made use of to create a base spring- female. A 3D System "Standard Triangle Language" or "Standard Tessellation Language" was used to convert to a corresponding G-code which basically is a language in which people tell computerized machine tools how to make something. A Slic3r is the tool one needs to convert a digital 3D model into printing instructions for a 3D printer. It cuts the model into horizontal slices (layers) and generates tool paths to fill them and then calculates the amount of material to be extruded. Fused deposition modeling (FDM) is an additive manufacturing (AM) technology commonly used for modeling, prototyping, and production applications. It is one of the techniques used for 3D printing that involves fusion deposition method by expending polylactic acid filament. The finished prototypes are fitted under the seats of vehicles. The Inconel based

**Outcomes:** On successful completion of program student should able to:

- Participants gain a heightened understanding of Virtual Labs, comprehending their purpose and advantages in educational settings.
- Students acquire hands-on experience, refining their practical skills in applying different concepts through the Virtual Lab workshop.
- The program cultivates a heightened interest among students, inspiring them to delve into basic and advanced concepts through remote experimentation, fostering a proactive approach to learning.

**Articulation Matrix:**

Course Outcomes	Program Outcomes											
	1	2	3	4	5	6	7	8	9	10	11	12
1					2							1
2			1		2							1
3				1	2							1
<b>Average</b>			<b>1</b>	<b>1</b>	<b>2</b>							<b>1</b>

**Photos:**



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Mangaluru - 575 006



Dakshina Kannada, Karnataka, India  
 Metallurgy and Material Department, Path to Metallurgy and Material department,  
 Srinivasnagar, Surathkal, Karnataka 575025, India  
 Lat 13.011115°  
 Long 74.794961°  
 20/12/23 11:51 AM GMT +05:30



Dakshina Kannada, Karnataka, India  
 Metallurgy and Material Department, Path to Metallurgy and Material department,  
 Srinivasnagar, Surathkal, Karnataka 575025, India  
 Lat 13.011082°  
 Long 74.794968°  
 20/12/23 11:46 AM GMT +05:30

*Layis*  
 Virtual Lab  
 Dept. Coordinator

*Rajesh*  
 Nodal Coordinator  
 23/12/2023

*[Signature]*  
 Principal  
 Principal  
 A.J. Institute of Engineering & Technology  
 Mangaluru - 575 006

Date: 01-02-2023

## Report on NITK SOLVE Virtual Lab Visit and Workshop

Name of the Program:	Visit to NITK Solve Virtual Lab	Program Dates & Timings:	31-01-2023 1:30pm-4:30pm		
Name & Details of the Resource Person:	Prof. K.V. Gangadharan - Professor-Mechanical Engineering Head - Centre for System Design NIT Karnataka, Surathkal Participating Institute Coordinator-Virtual Labs Mr Siya Sushil - Research Scholar Ms. Shreshta - Research Scholar Ms. Prajana - Research Scholar Mr. Rakshith – Research Scholar				
Organized by (Clubs/ Dept.)	Virtual Lab Committee				
Number of Participants	Student s	57	Facult y	2	
Program Outcome (PO) Mapping	PO1, PO2, PO3, PO4, PO5				
Coordinator	Mr John Prakash Veigas				

### About the Program:

A Visit to SOLVE Virtual Labs NIT Karnataka, Surathkal and Introductory workshop Virtual labs at is organized for the first-semester **Information Science and Engineering students (B-Section)** of A. J. Institute of Engineering and Technology. Resource person has given a hands-on demonstration of the virtual lab and briefed about the workshop and its benefits. Some experiments in the following virtual lab is demonstrated: Computer programming, Data Structures Lab, remote triggering lab etc.

Research scholars conducted a tour of ongoing studies in a variety of fields, including 3-D printing, laser cutting, electric vehicles with two and three wheelers, virtual reality, and unmanned aerial vehicles. Students are

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department and Class advisor Mrs Vishmitha Shetty from Mathematics department of AJIET.

**Objectives:** The program Virtual Lab awareness workshop enable students to

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**Outcomes:** On successful completion of program student should able to:

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2	3	2	2	2	3							
3	3	2	2	2	3							
Average	3	2	2	2	3							

**Photos:**



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*Veigas*  
01/02/23  
Nodal Coordinator  
Mr John Prakash Veigas

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Principal  
Principal  
A.J. Institute of Engineering & Technology  
Mangaluru - 575 006

Date: 26-01-2023

## Report on NITK SOLVE Virtual Lab Visit and Workshop

Name of the Program:	Visit to NITK Solve Virtual Lab	Program Dates & Timings:	25-01-2023 1:30pm-4:30pm		
Name & Details of the Resource Person:	Prof. K.V. Gangadharan - Professor-Mechanical Engineering Head - Centre for System Design NIT Karnataka, Surathkal Participating Institute Coordinator-Virtual Labs Mr Siya Sushil - Research Scholar Ms. Shreshta - Research Scholar Ms. Prajana - Research Scholar Mr. Rakshith – Research Scholar				
Organized by (Clubs/ Dept.)	Virtual Lab Committee				
Number of Participants	Student s	57	Facult y	3	
Program Outcome (PO) Mapping	PO1, PO2, PO3, PO4, PO5				
Coordinator	Mr John Prakash Veigas				

### About the Program:

A Visit to SOLVE Virtual Labs NIT Karnataka, Surathkal and Introductory workshop Virtual labs at is organized for the first-semester **Civil Engineering students (E section) & Mechanical Engineering Students (C Students)** of A. J. Institute of Engineering and Technology. Resource person has given a hands-on demonstration of the virtual lab and briefed about the workshop and its benefits. The following experiments are demonstrated in the lab: Impact Analysis test in Civil Engineering Labs, Determination of Alkalinity in water in the Environmental Engineering Lab.

Research scholars conducted a tour of ongoing studies in a variety of fields, including 3-D printing, laser cutting, electric vehicles with two and three

Engineering department and Class advisors Mrs Vilma D'Souza and Smitha Kini from Mathematics department of AJIET.

**Objectives:** The program Virtual Lab awareness workshop enable students to

- To create awareness about Virtual lab
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Average	3	2	2	2	3							

**Photos:**



GPS Map Camera

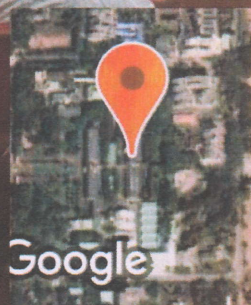
Dakshina Kannada, Karnataka, India

Metallurgy and Material Department, Path to Metallurgy and Material department, Srinivasnagar, Surathkal, Karnataka 575025, India

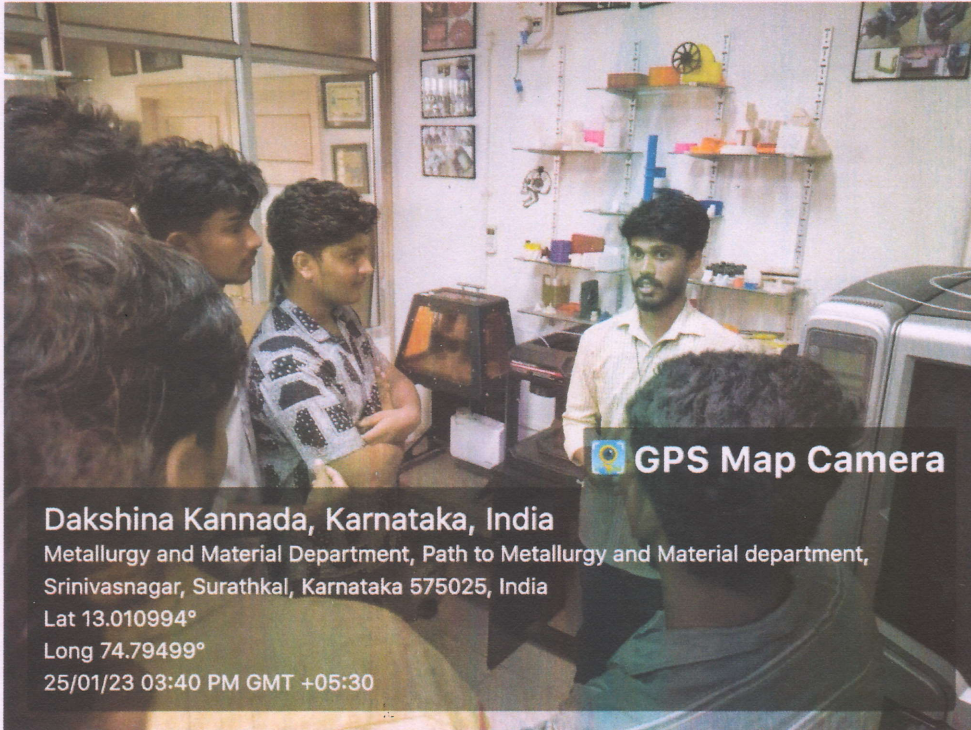
Lat 13.01099°

Long 74.79498°

25/01/23 01:48 PM GMT +05:30



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Mangaluru - 575 006



GPS Map Camera

Dakshina Kannada, Karnataka, India

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Srinivasnagar, Surathkal, Karnataka 575025, India

Lat 13.010994°

Long 74.79499°

25/01/23 03:40 PM GMT +05:30



GPS Map Camera

Dakshina Kannada, Karnataka, India

Metallurgy and Material Department, Path to Metallurgy and Material  
department, Srinivasnagar, Surathkal, Karnataka 575025, India

Lat 13.010994°

Long 74.79499°

25/01/23 04:01 PM GMT +05:30

Nodal Coordinator

*Rajm*  
26/01/2023

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