Sir M Visvesvaraya Institute of Technology, Bengaluru-562 157

Department of Mechanical Engineering

SUBMITTED TO THE PRINCIPAL:

Date: 13/12/2021

Permission to organize three days student development programme during 03/01/2022 to 05/01/2022

Purpose /Justification of SDP: with respect to the above subject the following coordinators from Mechanical Engineering would like to organize 3 days SDP on "**Python Programming with Real time Industrial Applications**" in association with M/S Aqmenz Automation Pvt Ltd Bangalore.

The objective of this program is mainly to focus on training of Students to develop coding skills in python programming with hands on session.

This particular coding programming is required for Mechanical Engineering as a part of covering syllabus beyond the subject as well students will get benefitted in terms of knowledge and skills.

PROFESSOR & HEAD
Department of Mechanical Engineering
Sir M. Visvesvaraya Institute of Technology
Bengaluru-562 157

IQAC
Bengaluru
562157

Department of Mechanical Engineering
Sir M. Visvesvaraya Institute of Technology, Bengaluru 56 2157

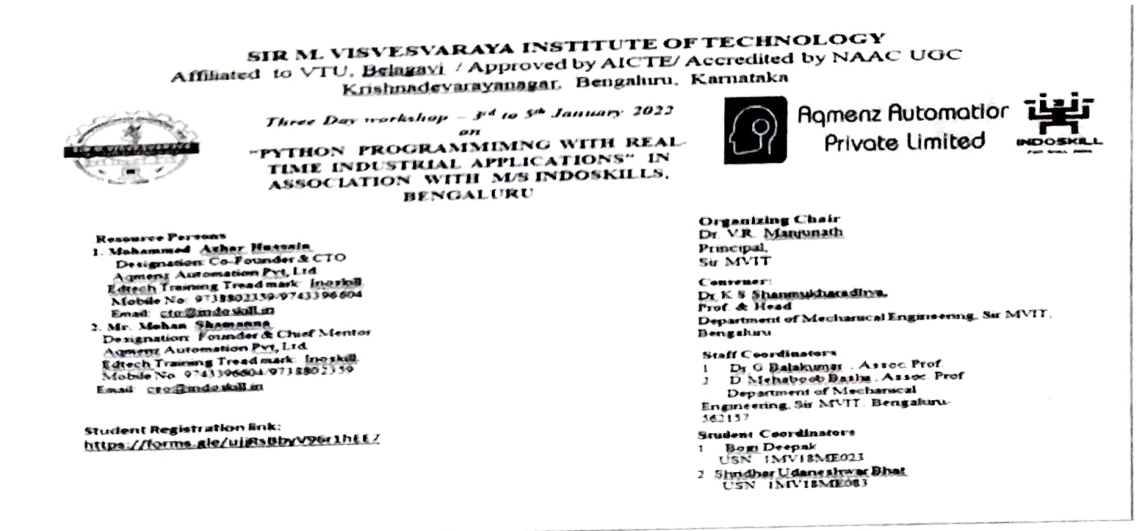
Ref No.: SMVIT/ME/ SDP /2022-2023

Date: 05/12/2022

REPORT ON 3 DAYS STUDENT DEVELOPMENT PROGRAM

Three days students Development Program were successfully conducted in the Department of Mechanical Engineering from 03/01/2022 to 05/01/2022 in association with M/s Aqmenz Automation Pvt. Ltd., Bengaluru. Day wise report of SDP is as follows

Dignitaries on the Dias:
Dr K S Shanmukharadhya, Head of the Department
Mr. Mohan Shamanna, Resource Person
Mr. Mohamed Azar, Resource Person
The student Coordinator Mr. Bogi Deepak, USN:1MV18ME023 gave the welcome address and extended warm welcome to all the dignitaries present & invited them to the dias with a banquet of flowers.
He also welcomed all the students' participants from the department of mechanical Engineering.
The resource Person Mr. Mohammed Azar addressed the participants about the program in brief.
The head of the department Dr K S Shanmukhardhya, addressed the students to make the best utilization of 3 days' workshop and to gain the knowledge in terms of application of the programming tool 'Python'
Vote of thanks was given by the student coordinator Mr.Shridhar U Dameshwar Bhat, USN:1MV18ME083


SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY
Affiliated to VTU, Belagavi / Approved by AICTE/ Accredited by NAAC UGC
Krishnadevarayanagar, Bengaluru, Karnataka

Three Day workshop – 3rd to 5th January 2022
on
"PYTHON PROGRAMMIMNG WITH REAL-TIME INDUSTRIAL APPLICATIONS" IN ASSOCIATION WITH M/S INDOSKILLS, BENGALURU

Aqmenz Automation Private Limited
INDOSKILL

Resource Persons
1. Mohammed Azhar Hussain
Designation: Co-Founder & CTO
Aqmenz Automation Pvt. Ltd.
Edtech Training Tread mark: Inoskill
Mobile No: 9738802359/9743396604
Email: cto@indoskill.in
2. Mr. Mohan Shamanna
Designation: Founder & Chief Mentor
Aqmenz Automation Pvt. Ltd.
Edtech Training Tread mark: Inoskill
Mobile No: 9743396604/9738802359
Email: cto@indoskill.in

Student Registration link:
https://forms.gle/uiRsBbyV96r1hEEZ

Organizing Chair
Dr V.R. Manjunath
Principal,
Sir MVIT

Convener:
Dr K S Shanmukharadhya,
Prof. & Head
Department of Mechanical Engineering, Sir MVIT, Bengaluru

Staff Coordinators
1 Dr G Balakumar, Assoc Prof
2 D Mehaboob Basha, Assoc Prof
Department of Mechanical Engineering, Sir MVIT, Bengaluru-562157

Student Coordinators
1 Bogi Deepak
USN: 1MV18ME023
2 Shridhar Udaneshwar Bhat
USN: 1MV18ME083

3-Days SDP Poster

Content of the SDP:

Day-1 8.00AM to 6.00PM	Session begin after a short tea-break. Mr. Mohammed Azar, the trainer took over the dias. and gave the introduction about the python programming and basic concepts of it
	Introduction to python programming scope & importance of Coding
	Installation of the software 'ANKONDA'
	Brief Introduction about python Programming & Applications
12.45PM to 1.30PM	Lunch Break
	Basic concepts of Python data types & Example programs
	Functions concepts & Application programs
	Looping in Python with Industrial Examples
	Lambda Function and Examples

Day-2 8.00AM to 6.00PM	
	Module concept used in python
	Pre-built Modules - time, math, random
	Project: Robotic Kinematic Calculations using Python
	Exceptional Handling with 'try-except'
12.45PM to 1.30PM	Lunch Break
	Structured Data Types – Lists, Tuples & Dictionaries. Introduction to Python Kit – ESP32 Microcontroller Board
	Pin Description and Peripherals interfaces introduction and usage
	Simple led blink program using python microcontroller interface

Day-3 8.00AM to 6.00PM	
	Industrial Application Projects, Bottle Sorting project in Bottle Industry
	Staircase Application Project, Sequential Motor Control Project
	Tea- Break
	Colour Mixing Paint Industry Project, Timer and counters programming using Python
	Packing Automation in Industry Projects
12.45PM to 1.30PM	Lunch Break
	Introduction to Machine Learning, Python Libraries - Numpy, Pandas, Matplotlib usage,
	Supervised and Unsupervised machine Learning, Test/Quiz
5.30PM to 6.15PM	Valedictory Function
	The valedoctory function started at 5.30PM @ ME seminar hall. The

	anchoring was done by the student coordinators. The HOD was the chief guest for the programme. The program involved, inviting the Chief guest & faculty coordinator to the dias. Three days summary of the workshop was briefed by the student Mr. Varun B. Feedback form the students about their exposure in these 3 days programme was taken. The Hod addressed the students about worthiness of the workshop that they under went in these 3 days and thanked the management & the principal for their support extended and also participants who shown interest and came forward for participation. Finally the HOD presented the payment of Rs 17,500/- in cash to the Mr, Mohan Shamanna, the Founder & Mentor of Aqmenz Automation Pvt. Ltd. Online feedback is collected from all the participants.

FEED BACK ON CO's

Sl.No	CO's
1	Able to understand, learn & apply the basics programming concepts of Python programming tools
2	Ability to apply the python codding skills on hardware microcontroller and solve industry related applications
3	Summarization of concepts of machine learning and deep learning

Rating: 1- slightly 2- Moderately 3- Strongly

Sl. No.	USN	NAME OF THE STUDENT	Registration Fee (Rs 500/-	Semester & section
1	1MV16ME058	PAVAN KUMAR G M	500	VII-A
2	1MV17ME053	R CHANDAN	500	VII-A
3	1MV18ME001	ABHAY S	500	VII-A
4	1MV18ME008	AJITH BHANDARKAR	500	VII-A
5	1MV18ME026	CHILUKURI KAUSHIK VARDHAN	500	VII-A
6	1MV18ME406	DINESH KUMAR A	500	VII-A
7	1MV18ME050	MANDAPATI CHETHAN SREEKAR	500	VII-B
8	1MV18ME051	MEGHARAJA M D	500	VII-B
9	1MV18ME053	MUSTAFA TRUMBOO	500	VII-B
10	1MV18ME055	NADIMPALLI LAKSHMI NARAYANA	500	VII-B
11	1MV18ME056	P CHANDAN KRISHNA	500	VII-B
12	1MV18ME058	PARIKSHIT B R	500	VII-B
13	1MV18ME072	SAI GANESH D	500	VII-B

14	1MV18ME079	SHASHANK S TEGGIHALLI	500	VII-B
15	1MV18ME081	SHASHIDHAR N	500	VII-B
16	1MV18ME092	VARUN B	500	VII-B
17	1MV19ME404	HARSHITH J	500	VII-B
18	1MV19ME411	RAKSHITH GOWDA J	500	VII-B
19	1MV19ME011	B S SRI SUMUKHA	500	V-A
20	1MV19ME012	CHANDAN B S	500	V-A
21	1MV19ME015	DHANUSH M P	500	V-A
22	1MV19ME017	DINAKAR M K	500	V-A
23	1MV19ME023	HITHESH R	500	V-A
24	1MV19ME024	HRITHIK B N	500	V-A
25	1MV19ME025	JAYASURYA K S	500	V-A
26	1MV19ME033	MOHAMMED YAHYA ADIL	500	V-A
27	1MV19ME066	RAVI B K	500	V-A
28	1MV19ME065	SURAJ A	500	V-B
29	1MV19ME068	V VIGNESH	500	V-B
30	1MV20ME406	KEERTHI D	500	V-B
31	1MV20ME404	EKANTH P MOHITHE	500	V-B
32	1MV20ME408	PREMSAGAR G	500	V-B
33	1MV20ME409	PUNEETH N	500	V-B
34	1MV20ME410	RAJATH H V	500	V-B
35	1MV20ME411	VAMSHI V	500	V-B

Online Feedback:

Name	USN	Rating 5=Excellent 4= Very Good 3= Good 2= Satisfactory 1= Poor	Comments
PAVAN KUMAR G M	1MV16ME058	4	Good
R CHANDAN	1MV17ME053	4	-
ABHAY S	1MV18ME001	5	This workshop was useful
AJITH BHANDARKAR	1MV18ME008	4	-
CHILUKURI KAUSHIK VARDHAN	1MV18ME026	5	No comments
DINESH KUMAR A	1MV18ME406	5	-
MANDAPATI CHETHAN SREEKAR	1MV18ME050	5	I guess my phobia towards coding will vanish after this
MEGHARAJA M D	1MV18ME051	5	Good
MUSTAFA TRUMBOO	1MV18ME053	5	good
NADIMPALLI LAKSHMI NARAYANA	1MV18ME055	4	It was very interesting
P CHANDAN KRISHNA	1MV18ME056	2	I'm interested in learning

PARIKSHIT B R	1MV18ME058	5	I would like to learn this language and apply it in industries
SAI GANESH D	1MV18ME072	5	I'm interested in learning
SHASHANK S TEGGIHALLI	1MV18ME079	4	Thanks for introducing this course
SHASHIDHAR N	1MV18ME081	4	.
VARUN B	1MV18ME092	3	-
HARSHITH J	1MV19ME404	4	Hope if I learn everything from basics it would be helpful
RAKSHITH GOWDA J	1MV19ME411	5	Good
B S SRI SUMUKHA	1MV19ME011	5	Good course
CHANDAN B S	1MV19ME012	4	Excellent
DHANUSH M P	1MV19ME015	5	I want the workshop at advanced level
DINAKAR M K	1MV19ME017	1	Not Interested
HITHESH R	1MV19ME023	5	No
HRITHIK B N	1MV19ME024	5	Yes
JAYASURYA K S	1MV19ME025	4	Good
MOHAMMED YAHYA ADIL	1MV19ME033	5	-
RAVI B K	1MV19ME066	4	.
SURAJ A	1MV19ME065	5	I need workshop
V VIGNESH	1MV19ME068	5	Nothing
KEERTHI D	1MV20ME406	5	Interested in learning python
EKANTH P MOHITHE	1MV20ME404	5	This workshop will help me to increase knowledge in coding field
PREMSAGAR G	1MV20ME408	5	Good
PUNEETH N	1MV20ME409	2	.
RAJATH H V	1MV20ME410	5	Excellent
VAMSHI V	1MV20ME411	4	-

Co-coordinators

HoD

PROFESSOR & HEAD
Department of Mechanical Engineering
Sir M. Visvesvaraya Institute of Technology
Bengaluru-562 157

Sir M. Visvesvaraya Institute of Technology, Bengaluru-562157

Department of Mechanical Engineering

Final Registered students List: **Date: 19/01/2022**

Sl. No.	USN	NAME OF THE STUDENT	Registration Fee (Rs 500/-	Semester & section	Certificate issued
1	1MV16ME058	PAVAN KUMAR G M	500	VII-A	
2	1MV17ME053	R CHANDAN	500	VII-A	
3	1MV18ME001	ABHAY S	500	VII-A	
4	1MV18ME008	AJITH BHANDARKAR	500	VII-A	
5	1MV18ME026	CHILUKURI KAUSHIK VARDHAN	500	VII-A	
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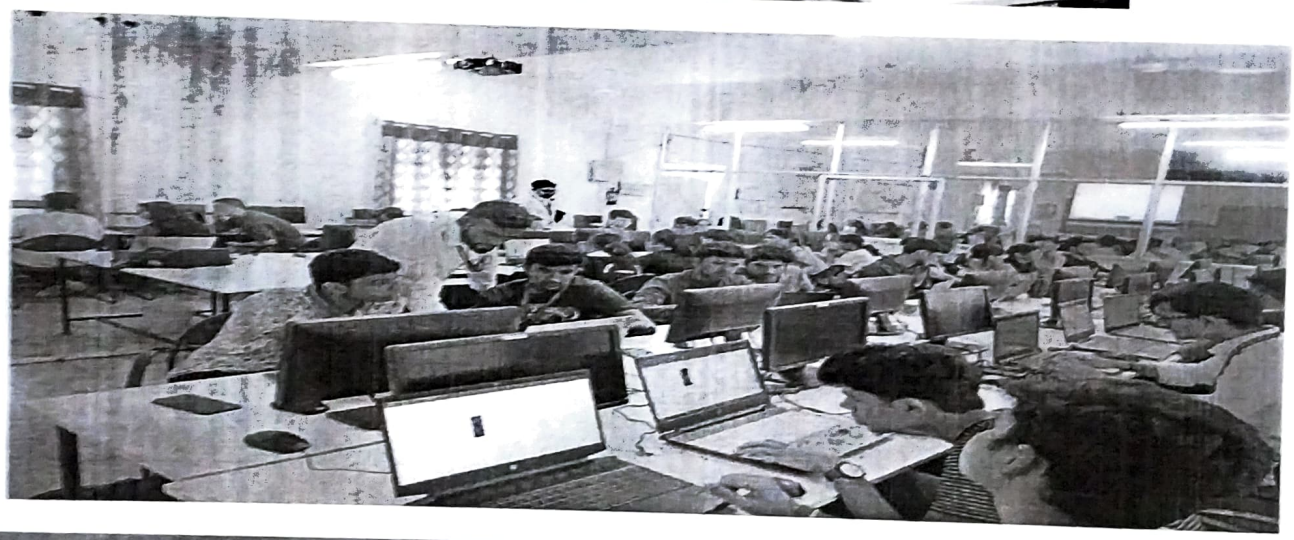
35	1MV20ME411	VAMSHI V	500	V-B	

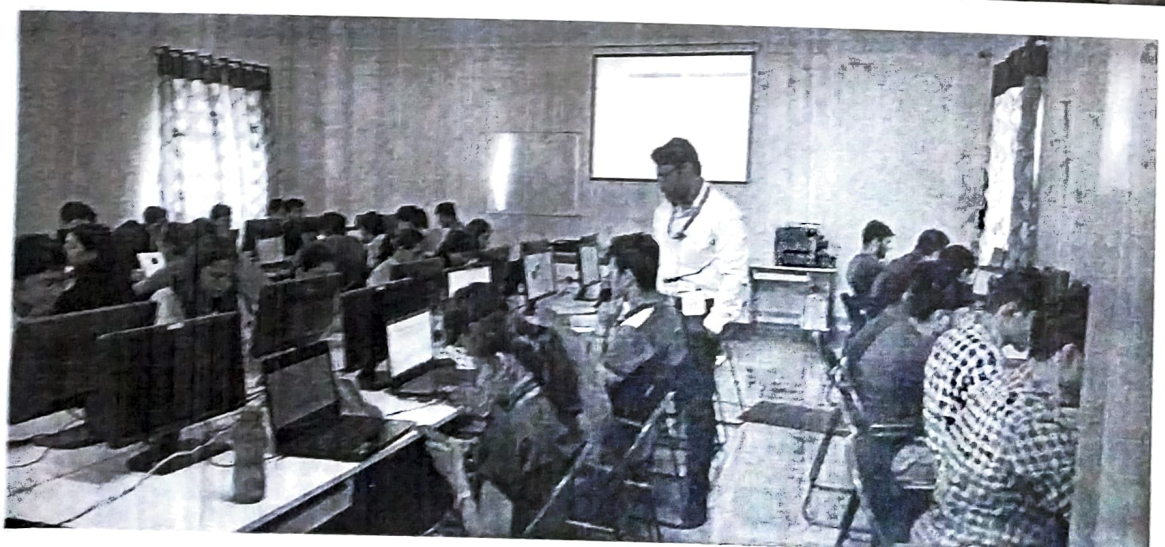
19/01/22
Dr. G Balakumar

HOD

PROFESSOR & HEAD
Department of Mechanical Engineering
Sir M. Visvesvaraya Institute of Technology
Bengaluru-562 157

Related Photographs





Aqmenz Automation Private Limited

INDOSKILL
FOR SKILL INDIA

SIR M.VISVESVARAYA INSTITUTE OF TECHNOLOGY

Approved by AICTE | Affiliated to VTU, Belagavi | Accredited by NBA

Bengaluru-562157, Karnataka

CERTIFICATE

OF COMPLETION

THIS CERTIFICATE IS PROUDLY PRESENT TO

VARUN B

Student of **Mechanical Engineering** bearing USN **1MV18ME092** has successfully completed **Skill Development Course** on **"Python Programming and Industrial Applications"** in association with **Aqmenz Automation Private limited** from 03.01.2022 to 05.01.2022.

CERTIFICATE ISSUE NO: AW/ 8089 / FY2022

AQMENZ Automation Private Limited Bangalore 560 032

Mr Mohan V S
Chief Executive Officer (CEO), AQMENZ Automation Pvt. Ltd., Bengaluru - 560032

Mr Mohammed Azhar Hussain
Chief Technology Officer (CTO), AQMENZ Automation Pvt. Ltd., Bengaluru - 560032

Dr G Balakumar (Coordinator)
Associate professor
Department of Mechanical Engineering

Mr Mahaboob Basha D (Coordinator)
Associate professor
Department of Mechanical Engineering

Dr K S Shanmukharadhya
(Convener)
Professor & Head
Department of Mechanical Engineering

Dr V R Manjunath
PRINCIPAL (Organizing Chair)

Sir M. Visvesvaraya Institute of Technology, Bengaluru-562157

Department of Mechanical Engineering

SUBMITTED TO THE PRINCIPAL:

Subject: Permission to organize Three Days Student Development Programme during **01/12/2022 to 03/12/2022- Tentatively.**

Purpose/Justification of SDP: With respect to the above subject the following coordinators from Department of Mechanical Engineering would like to organize three day student development program in the department of Mechanical Engineering on ***"PYTHON CODING WITH APPLICATIONS PROJECTS & SOLUTIONS"*** *in association with* ***M/S Aqmenz Automation Pvt. Ltd.,,*** *Bengaluru-32 for seventh semester mechanical engineering students* **without involving financial implications.** *M/S Aqmenz Automation Pvt. Ltd., has been identified as resource company in giving successful hands on training in python programming as they have also given successful training at various universities/ institution like Reva university, Gitam, Venkateshwara college of engineering, BMSIT, Acharya Institutes etc.*

The objective of this SDP is mainly to focus on training of students to develop coding skills in python programming with hands on session. This particular coding programme is required for mechanical engineering as part of covering beyond syllabus in the mechatronic subject as well as the student will get benefitted interms of knowledge & skills which will help them to undertake various mechatronics based innovative projects. Keeping this in mind, this particular student development Programme has been identified.

The details of the SDP are enclosed (Annexure-1) hereby for your kind perusal. We request you to kindly give the permission to conduct this three day SDP and do the needful.

Note: The cash collected from the students will be deposited into the principal's account and same will be utilized as per actual expenses via principal's permission.

Budget Summary:

Sl. No.	Details	Amount in INR	Expenses in INR
1	Expected 50 Registration @Rs.700/- per head.	35,000/-	
2	Resource person Payment @Rs.10,000/- per day **(without TDS)**		30000/-
3	Other Expenses: Banners, Scribbling pads, pens, Mementoes, Lunch for resource person, Refreshments for participants etc.		5000/-
	Total Amount in INR	35,000/-	35,000/-

IQAC COORDINATOR
SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY
BENGALURU - 562 157

Budget details:

Sl. No	Item Details	Quantity Required and amount	Approximate Amount (Rs.)
1	**Stationery Item**	2	200/-
	Resource Person (without TDS) In the favor of **AQMENZ AUTOMATION PRIVATE. LIMITED.**	Rs.10,000/- per day	30,000/-
	Banners	2	1,500/-
	Lunch for resource person and coordinators	12	750/-
	Refreshments for Participants	60	1,800/-
	Pens & Notepad	4	250/-
	Memento's	1	500/-
2	**Registration Fee Rs. 700/- per head**	Rs.700x50 students	**35,000.00**

Gaps Identified:

PO3: Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO5: Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations

PO9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO 12: Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

CO-PO MAPPING

Sl.No	CO's	PO3	PO5	PO9	PO12
1	Able to understand, learn & apply the basics programming concepts of Python programming tools	3	3	2	2
2	Ability to apply the python codding skills on hardware microcontroller and solve industry related applications	3	2	2	2
3	Summarization of concepts of machine learning and deep learning	2	2	2	2

Details of the Resource Person:

1. **Mohammed Azhar Hussain**
   Designation: Co-Founder & CTO
   Aqmenz Automation Pvt, Ltd.
   Edtech Training Tread mark: Inoskill.
   Mobile No: 9738802359/9743396604
   Email: cto@indoskill.in
2. **Mr. Mohan Shamanna**
   Designation: Founder & Chief Mentor
   Aqmenz Automation Pvt, Ltd.
   Edtech Training Tread mark: Inoskill.
   Mobile No: 9743396604/9738802359
   Email: ceo@indoskill.in

Staff Coordinators

1. **Dr. G Balakumar**
   Assoc. Prof.

Nataraja M
Asist. Prof.

Enclosures:

1. **Program Schedule (Annexure-1)**
2. **Company Brochure**

Submitted to the principal:
The proposed 3 days SDP is related to "Python and its applications" for the final year Students.
There is no financial requirements from the Institute.
We request your kind approval to conduct the program.

IA 11.22

HOD

PROFESSOR & HEAD
Department of Mechanical Engineering
Sir M. Visvesvaraya Institute of Technology
Bengaluru-562 157

PRINCIPAL
Sir M.V.I.T., Bangalore-562 157.

Department of Mechanical Engineering
Sir M. Visvesvaraya Institute of Technology, Bengaluru 56 2157

Ref No.: SMVIT/ME/ SDP /2022-2023 **Date:** 05/12/2022

REPORT ON 3 DAYS STUDENT DEVELOPMENT PROGRAM

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Dignitaries on the Dias:
Dr Rakesh S G, Principal, Sir MVIT as chief guest
Dr K S Shanmukharadhya, Head of the Department
Mr. Mohan Shamanna, Resource Person
Mr. Mohamed Azar, Resource Person

The student Coordinator Mr. Puneeth Kumar gave the welcome address and extended warm welcome to all the dignitaries present & invited them to the dias with a banquet of flowers.
He also welcomed all the students' participants from the department of mechanical Engineering and also from other departments.
As regular practice, the program started with lightening of the lamp followed by an invocation – song by a group of girl students of V BE Mechanical Engg.
The resource Person Mr. Mohammed Azar addressed the participants about the program in brief.
The head of the department Dr K S Shanmukhardhya, addressed the students to make the best utilization of 3 days workshop and to gain the knowledge in terms of application of the programming tool 'Python'
Finally the Principal, Dr Rakesh S G gave the motivational speech addressing students that this programming tool is widely used in much application including automation. He concluded his speech with best wishes each & every one. Vote of thanks was given by the student coordinator Mr. Puneeth.

PROFESSOR & HEAD
Department of Mechanical Engineering
Sir M. Visvesvaraya Institute of Technology
Bengaluru-562-157

Content of the SDP:

Day-1 8.00AM to 6.00PM	Session begin after a short tea-break. Mr. Mohammed Azar, the trainer took over the dias. and gave the introduction about the python programming and basic concepts of it
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	Packing Automation in Industry Projects
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	Introduction to Machine Learning, Python Libraries - Numpy, Pandas, Matplotlib usage.
	Supervised and Unsupervised machine Learning, Test/Quiz
5.30PM to 6.15PM	Valedictory Function

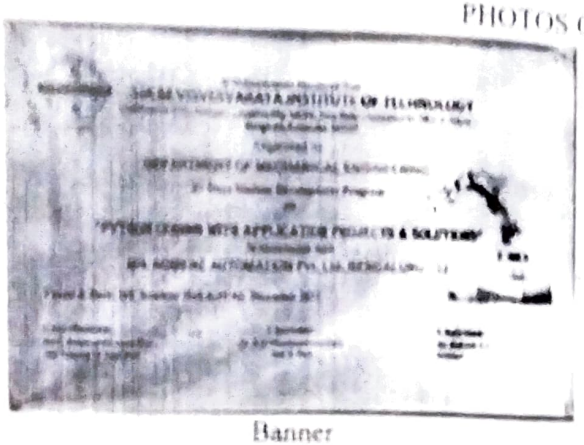
PROFESSOR & HEAD
Department of Mechanical Engineering
Sir M. Visvesvaraya Institute of Techonology
Bengaluru-562 157

	The valedoctory function started at 5.30PM @ ME seminar hall. The anchoring was done by the student coordinators. The HOD was the chief guest for the programme. The program involved, inviting the Chief guest & faculty coordinator to the dias. Three days summary of the workshop was briefed by the student Rishikesh of V semester Mechanical branch. Feedback form the students about their exposure in these 3 days programme was taken. The Hod addressed the students about worthiness of the workshop that they under went in these 3 days and thanked the management & the principal for their support extended and also participants who shown interest and came forward for participation. Finally the HOD presented the payment of Rs 30,000/- in cash to the Mr, Mohan Shamanna, the Founder & Mentor of Aqmenz Automation Pvt. Ltd. A group photograph was taken at the entrance of Department of Mechanical Engineeering with Poster at the back-ground.

PROFESSOR & HEAD
Department of Mechanical Engineering
Sir M. Visvesvaraya Institute of Technology
Bengaluru-562 157

1 Days Student Development Program (SDP) on *'PYTHON PROGRAMMIMNG WITH APPLICATION PROJECTS & SOLUTIONS'* in association with **M/S Aqmenz Automation Pvt. Ltd., Bengaluru** from 01/12/2022 to 03/12/22

PHOTOS OF SDP



Banner

Address by the Principal Prof. Rakesh S G

Welcoming the resource person Mr. Mohan Shamanna
Founder & Mentor, Aqmenz Automation Pvt. Ltd., Bengaluru

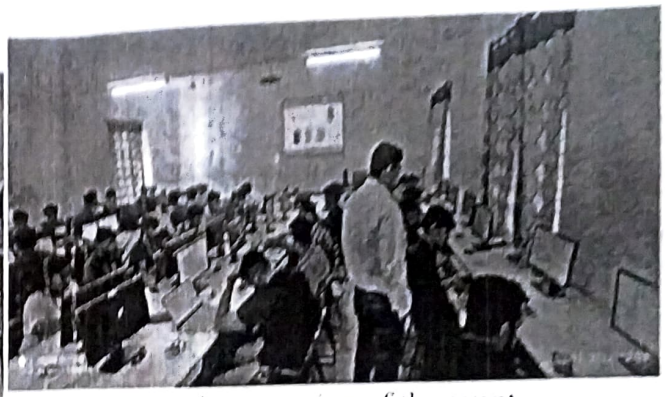
Welcoming the resource person Mr. Mohammed Azar
Mentor, Aqmenz Automation Pvt. Ltd., Bengaluru

PROFESSOR & HEAD
Department of Mechanical Engineering
Sir M. Visvesvaraya Institute of Technology
Bengaluru-562 157

Students along with the staff

Hands on session of the event

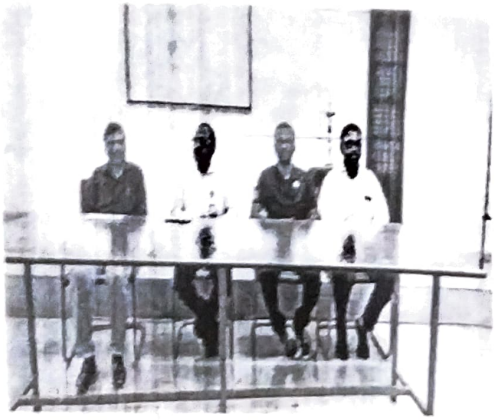
Hands on session of the event



Hands on session of the event

Hands on session of the event

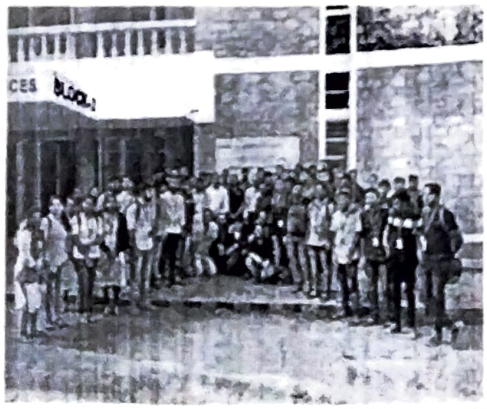
PROFESSOR & HEAD
Department of Mechanical Engineering
Sir M. Visvesvaraya Institute of Technology
562 157



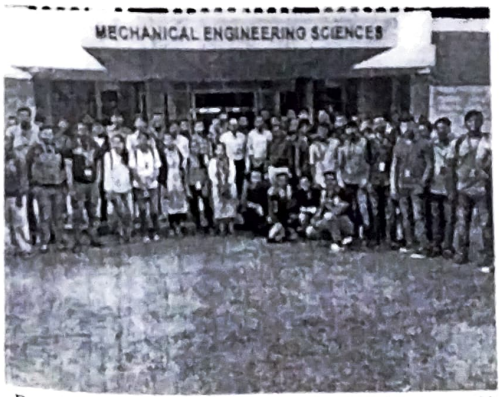
Valedictory function

Students participants in Valedictory

Feedback from the student-participant



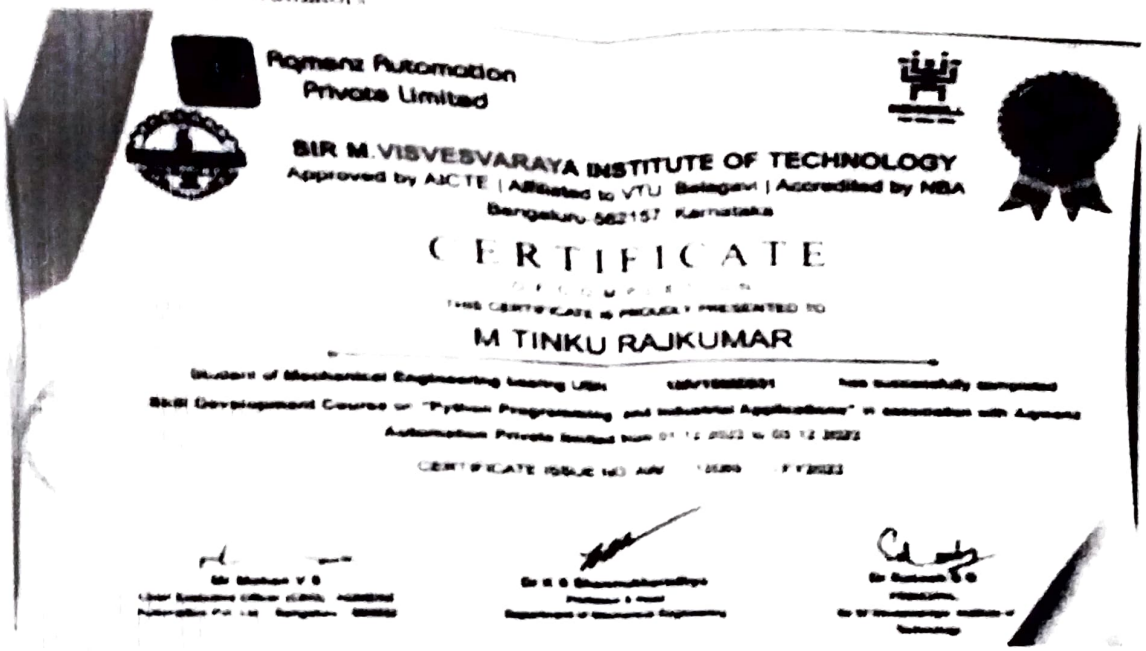
Participants group photo with HOD & staff



Participants group photo with HOD & staff coordinators

PROFESSOR & HEAD
Department of Mechanical Engineering
Sir M. Visvesvaraya Institute of Technology
Bengaluru-562 157

Coordinators



Rajmenz Automation Private Limited

SIR M.VISVESVARAYA INSTITUTE OF TECHNOLOGY
Approved by AICTE | Affiliated to VTU, Belagavi | Accredited by NBA
Bengaluru-562157, Karnataka

CERTIFICATE

OF COMPLETION

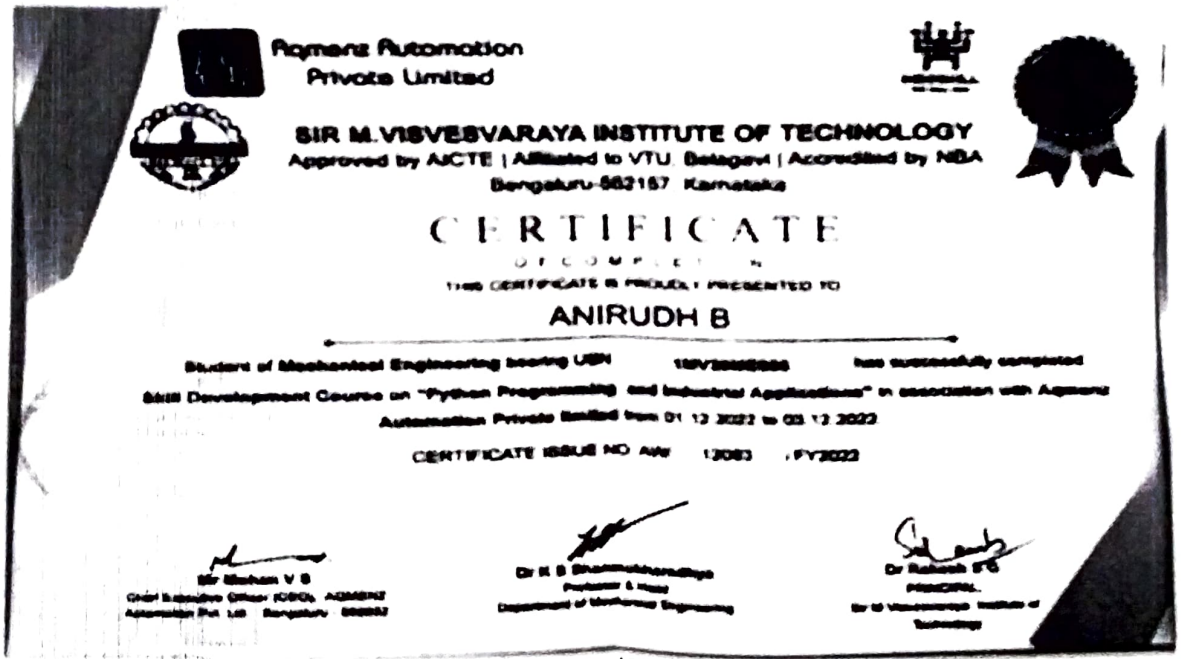
THIS CERTIFICATE IS PROUDLY PRESENTED TO

M TINKU RAJKUMAR

Student of Mechanical Engineering bearing USN [illegible] has successfully completed
Skill Development Course on "Python Programming and Industrial Applications" in association with Rajmenz
Automation Private limited from 01.12.2022 to 03.12.2022

CERTIFICATE ISSUE NO: AIM [illegible] /FY2022

Sample Certificate



Rajmenz Automation Private Limited

SIR M.VISVESVARAYA INSTITUTE OF TECHNOLOGY
Approved by AICTE | Affiliated to VTU, Belagavi | Accredited by NBA
Bengaluru-562157, Karnataka

CERTIFICATE

OF COMPLETION

THIS CERTIFICATE IS PROUDLY PRESENTED TO

ANIRUDH B

Student of Mechanical Engineering bearing USN [illegible] has successfully completed
Skill Development Course on "Python Programming and Industrial Applications" in association with Rajmenz
Automation Private limited from 01.12.2022 to 03.12.2022

CERTIFICATE ISSUE NO: AIM 13083 /FY2022

Sample Certificate

PROFESSOR & HEAD
Department of Mechanical Engineering
Sir M. Visvesvaraya Institute of Technology
Bengaluru-562 157

Sl.No	CO's
CO1	Able to understand, learn & apply the basics programming concepts of Python programming tools
CO2	Ability to apply the python codding skills on hardware microcontroller and solve industry related applications
CO3	Summarization of concepts of machine learning and deep learning

Student List:

Sl. No.	USN	NAME OF THE STUDENT	0	1	2	3	Sig
		7th Semester Mechanical Engineering					
1	1MV19ME031	M TINKU RAJKUMAR				3	
2	1MV19ME010	BASAMMA				3	
3	1MV20ME407	MAHESH AINAPURE				3	
		5th Semester Mechanical Engineering					
1	1MV20ME001	ABHILASH G S				3	
2	1MV20ME002	ABHISHEK S				3	
3	1MV20ME006	ANIRUDH B				3	
4	1MV20ME009	BHASKAR M.L				3	
5	1MV20ME012	DHANUSH.S				3	
6	1MV20ME013	DHARSHAN YADAV K				3	
7	1MV20ME015	DINESH M				3	
8	1MV20ME016	DIVYA K				3	
9	1MV20ME017	HARISH VERMA				3	

PROFESSOR & HEAD
Department of Mechanical Engineering
Sir M. Visvesvaraya Institute of Technology
Bengaluru-562 157

Sl. No.	USN	NAME OF THE STUDENT	PO3	PO5	PO9	PO12	Sig
10	1MV20ME018	JEEVANKUMAR C R	0	1	2	3	
11	1MV20ME020	KISHOR KUMAR R				3	
12	1MV20ME022	LAKSHMISHA R				3	
13	1MV20ME023	M S PRAVEEN SAI				✓	
14	1MV20ME024	MALLIKARJUNA SAJJAN				3	
15	1MV20ME026	NISHANTH KALYAN N				3	
16	1MV20ME028	PRANOY JASON DSOUZA				✓	
17	1MV20ME031	RAJEEV K L				✓	
18	1MV20ME032	RAKESH N				3	
19	1MV20ME033	RISHIKESH				3	
20	1MV20ME034	SACHIN AGARWAL				3	
21	1MV20ME035	SHANTAVEER				3	
22	1MV20ME036	SHOAIB AFFAN M				3	
23	1MV20ME037	SHREYAS BELLIAPPA K K				3	
24	1MV20ME038	SRUJAN K				3	
25	1MV20ME039	SUHAS N M				3	
26	1MV20ME040	SUKSHITH VIDYASAGAR SHIVALENKAMATH				3	
27	1MV20ME041	SURAJ CHAVAN				3	
28	1MV20ME043	VARUNA B				3	
29	1MV20ME044	VENKATESH				3	

PROFESSOR & HEAD
Department of Mechanical Engineering
Sir M. Visvesvaraya Institute of Technology
Bengaluru-562 157

Sl. No.	USN	NAME OF THE STUDENT	0	1	2	3	Sig
30	1MV20ME045	VISHWAS RAO K				✓	
31	1MV21ME400	AJAYKANTH G V				✓	
32	1MV21ME403	ARAVIND CHANDRAKANTH BHUSE				✓	
33	1MV21ME405	CHARAN KUMAR S				✓	
34	1MV21ME406	CHETHAN K				✓	
35	1MV21ME407	DANESH UPPALADINNI				✓	
36	1MV21ME408	DARSHAN N				✓	
37	1MV21ME409	DEEPAK RAJU N				✓	
38	1MV21ME405	CHARAN KUMAR S				✓	
39	1MV21ME410	DIVAKARABABU G S				✓	
40	1MV21ME411	GURUKIRAN K				✓	
41	1MV21ME412	HANISH N				✓	
42	1MV21ME413	HAREESHA V A				✓	
43	1MV21ME414	HARIHARAN S				✓	
44	1MV21ME415	HEMANTH S				✓	
45	1MV21ME416	KIRAN				✓	
46	1MV21ME417	KOUSTUBHA VISHNU S				✓	
47	1MV21ME418	M NITHISH KUMAR				✓	
48	1MV21ME419	MADHU J S				✓	
49	1MV21ME420	MAHANTHESHA M H				✓	

PROFESSOR & HEAD
Department of Mechanical Engineering
Sir M. Visvesvaraya Institute of Technology
Bengaluru-562 157

Sl. No.	USN	NAME OF THE STUDENT	0	1	2	3	Sig
50	1MV21ME421	MAHESH R				✓	
51	1MV21ME423	MEENA H E				3	
52	1MV21ME424	MOHAMMED ADNAN SHARIFF				✓	
53	1MV21ME425	MOHAMMED SAMIUDDIN				✓	
54	1MV21ME426	NANDAN KUMAR N				✓	
55	1MV21ME429	PAVAN KALMADI K A				✓	
56	1MV21ME430	PAVAN KUMAR D A				✓	
57	1MV21ME431	PUNEETH J				✓	
58	1MV21ME432	RAKSHITHA B				3	
59	1MV21ME433	RAVITEJA B				✓	
60	1MV21ME434	RISHEEK KAMBLE				3	
61	1MV21ME435	SACHIN PATIL				3	
62	1MV21ME436	SAGAR P KALLAPUR				3	
63	1MV21ME438	SHIV KUMAR				✓	
64	1MV21ME439	SIRISHA S				✓	
65	1MV21ME440	SUMEET HUGAR				✓	
66	1MV21ME443	TEJAS S				✓	
67	1MV21ME444	TEJESH D				✓	
68	1MV21ME445	U SANDESH					
69	1MV21ME446	UMESH S				✓	

PROFESSOR & HEAD

Sl. No.	USN	NAME OF THE STUDENT	0	1	2	3	Sig
70	1MV21ME447	VIJAYA KUMAR K R				3	
71	1MV21ME448	YASHWANTH M				✓	
72	1MV21ME449	YOGESH G E				✓	
73	1MV21ME450	YOGESH H K				3	
		3rd Semester Mechanical Engineering					
1	1MV21ME003	AMAN KISHOR MADGAONKAR				3	
2	1MV21ME008	ARUN				3	
3	1MV21ME010	K R PRATHISH				3	
4	1MV21ME012	KHIM BAHADUR SINJAPATI				3	
5	1MV21ME013	KIRAN R				3	
6	1MV21ME018	POORNA CHANDRA TEJASVI S				3	
7	1MV21ME022	SAM PAUL JOSE				3	
8	1MV21ME023	SHAGNIK BHATTACHARJEE				3	
9	1MV21ME025	SUDARSHAN R				3	
10	1MV21ME026	SURYA K C				3	
11	1MV21ME027	SUVINEETH A				3	
12	1MV21ME028	TANMAY PATHAK				3	
13	1MV21ME029	VARUN R				3	
14	1MV21ME030	VIKASA M				3	

PROFESSOR & HEAD
Department of Mechanical Engineering
Sir M. Visvesvaraya Institute of Techonolgy
Bengaluru-562 157

IndoSkill Feedback Form
Cumulative Report

INDOSKILL
FOR SKILL INDIA

Batch: 5th sem, Department of Mechanical Engineering, Sir MVIT, Bengaluru
Workshop: Python Programming with Application Projects & Solutions
Date:1st to 3rd December 2022
No. of Students Feedback Responses: 78
Rating: 5 – Excellent, 4 - Very Good, 3 – Good, 2 – Fair, 1 – Poor

Sl no	Questions	Overall Rating (out of 5)
1	The content shared was valuable and was clear and to the level of my understanding	4.62
2	The training is applicable to my role and will support me in my functional role	4.50
3	The trainer was able to give me hands-on experience and demo which made it easier for me to follow	4.72
4	The training was structured and time management was well planned	4.47
5	How knowledgeable was the trainer	4.82
6	The presentation was good and queries/doubts raised were answered	4.74
7	Overall Rating	4.65

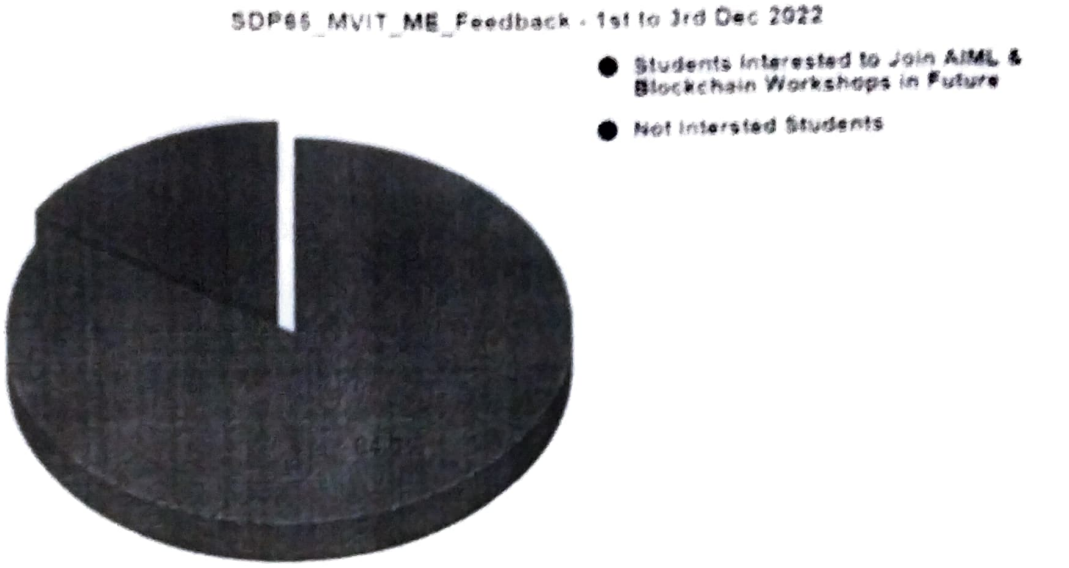
Feedback link:
https://docs.google.com/forms/d/11zNa7VPpOsjUxPBNU_XQbqUCdKZa3tU9s3qIIFyLP-4/edit

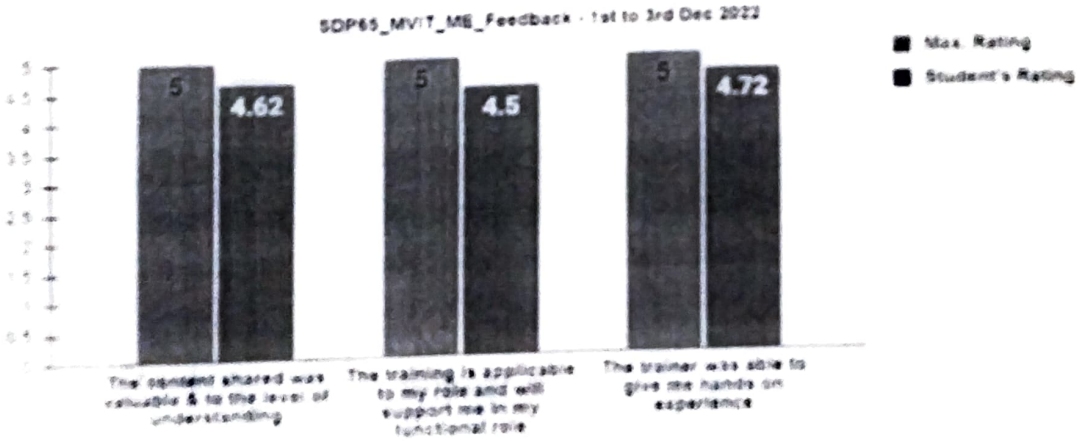
Response Sheet link:
https://docs.google.com/spreadsheets/d/1gOJq0GK-PR9KXazwrtBuR5ruwVdGHf4euXAsg-2_amU/edit#gid=52999204

For Indoskill
Mohammed Azhar Hussain
Ph: 9738802359 / 9743396604
CTO - Aqmenz Automation Pvt Ltd
Bangalore - 32

www.IndoSkill.In

Student's Feedback:





BT

Dept. of Mech. E. No. 225 Date 28/4/22 Bangalore

SIR M VISVESVARAYA INSTITUTE OF TECHNOLOGY, BANGALORE
DEPARTMENT OF MECHANICAL ENGINEERING

28.04.2022

Sl. No. 388 Date 29/4/22 SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY BANGALORE-562 157

Submitted to the Principal:

Through: Proper channel

Subject : Request for approval to conduct "3 days National Level Workshop on Design and Development of Quadcopter UAV with Payload Delivery" for the Students and Sanction of Rs. 16,600=00 (Rupees Sixteen thousand six hundred only) for the same.

With reference to the above, we would like to conduct a 3 days National Level Workshop on Design and Development of Quadcopter UAV with Payload Delivery for our students and students from other colleges, to enhance their domain knowledge and employability skills.

Mr. A.J. Arun Jeya Prakash Co-Founder & CEO Aviocian Technologies Pvt. Ltd. New Delhi is the resource person.

This programme is planned to be conducted in the month of June 2022 for 3 days. This programme has been planned to provide the knowledge in UAV/Drone technologies and make the students to innovate new ideas & products for the betterment of mankind. Importance of this programme and approximate budget details are herewith enclosed.

This National level workshop is being organized to celebrate the Silver Jubilee Year of Visvesvaraya Technological University, which came into existence in1998. This workshop is envisioned to realize Sustainable Development Goals (Quality Education & Gender Equality) as accepted by NITI Ayoga of Government of India

Hence, we request your kind self to accord your perusal to carry out the same by providing financial assistance of **Rs. 16,600=00** (Rupees Sixteen thousand six hundred only).

Kindly do the needful & Oblige.

Rs 16,600/-

Submitted to the principal.
Respected sir
The workshop has been planned as per the direction of VTU to celebrate the Silver jubilee year of the University. The topic is very useful to the Students of MECH/ECE/EEE/TE/CIVIL. The workshop fee will be collected from the participants we request the dispense amount of Rs 16,600/- to organise the workshop. Details are enclosed for your kind perusal

29.4.22 HOD, MECH

PROFESSOR & HEAD
Dept. of Mechanical Engineering
Sir M. Visvesvaraya Institute of Technology
Bangalore-562 157

Co-ordinators :

1. Dr. V. Shantha
2. Mr. Mahaboob Basha D

Co-Coordinators :

1. Mr. Khalique Ejaz Ahmed
2. Mr. Janardhan K
3. Asha Rani A

Mentor: Dr.K.S. Shanmukharadhya

10/6/22

Encl:

1. VTU Circular
2. About the Company, workshop & Resource person
3. Programme Schedule
4. Budget Proposal

Recommended by Re with following conditions: Ayoga dtd 10/5/2022

Since M/S Aviocian Technologies is collecting a registration fee of Rs 2500/- per participant, he may absorb the incidental expenses upto 30%, without any further financial support.

SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY BANGALORE-562 157

SIR M VISVESVARAYA INSTITUTE OF TECHNOLOGY
BANGALORE – 562 157

DEPARTMENT OF MECHANICAL ENGINEERING

Three days National Level Workshop

"Design and Development of Quadcopter UAV with Payload Delivery"

The workshop of UAV was conducted on 15-12-2022 to 17-12-2022, Mr Arun Jeya Prakesh Director and CEO of Aviocian Technologies Pvt Ltd was the Resource Person.

The workshop was divided into the following phases like

- Concept Orientation: Understanding Drone, Physics, Avionics, Challenges involved.
- Design and Simulation: 3D Model Design, Structure Analysis of Quadcopter Drone.
- Hands on Practical: Developing a complete Quadcopter Drone with all calibration and integration.
- Application of Drone for payload delivery.

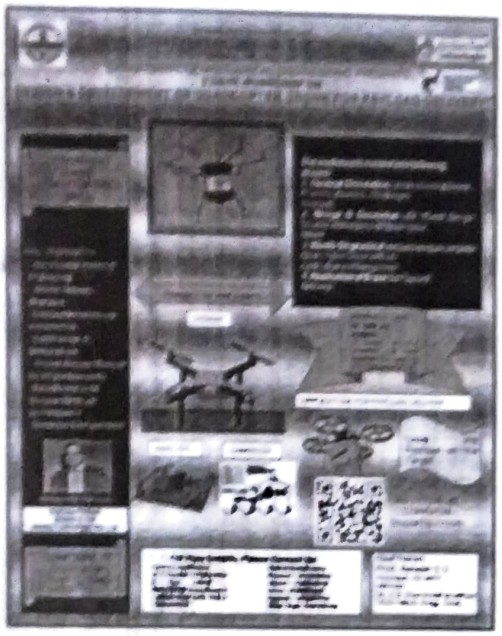
The highlights of this workshop was

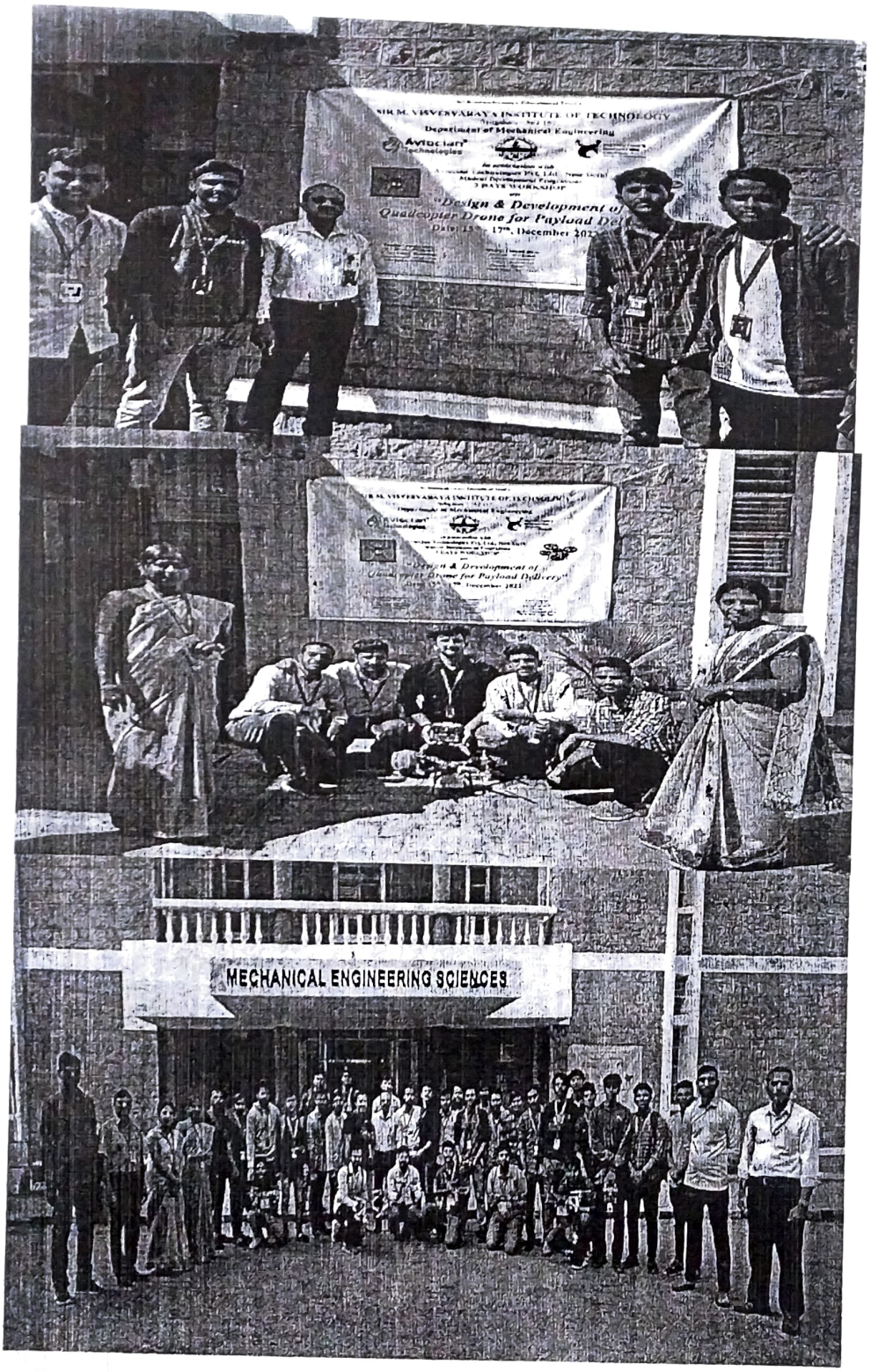
- It's open to all branches of Engineering.
- Drone Design, Analysis, hands on experience.

Concept Orientation: Understanding Drone, Physics, Avionics, Challenges involved in Design and Simulation, 3D Model Design, Structure Analysis of Quadcopter Drone. Hands on Practical Developing a complete Quadcopter Drone with all calibration and integration.

The students were Inspired and obtained knowledge in various new technologies and innovative ideas.Mentor: Dr. K S Shanmukharadhya, HOD

Faculty Coordinators Dr V Shantha
Mr K Ejaz Ahmed
Mr Janardhana K
Mrs Asha Rani




SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY
Department of Mechanical Engineering
Aviocian Technologies
"Design & Development of
Quadcopter Drone for Payload
MECHANICAL ENGINEERING SCIENCES

SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY, BANGALORE
DEPARTMENT OF MECHANICAL ENGINEERING

Date: 17.12.2022

Feedback

"Design and Development of Quadcopter UAV with Payload Delivery"

The workshop of UAV was conducted on 15-12-2022 to 17-12-2022

Student Name: Puneeth. J USN: 1MV21ME42

Semester/ Branch: ME / 6th Contact No.: 9590877853

Email id.: puneethj818@gmail.com

Sl. No		Excellent	Very Good	Good	Satisfactory
1	Topic selected for the program	✓			
2	Demonstration Professionalism		✓		
3	Did the program enhance your Placement Skills in Individual & team work?	✓			
4	Did the program enhance your skills in communicating effectively with the engineering community?	✓			
5	Does the obtained knowledge is useful in understanding the engineering & Placement activities?		✓		
6	Overall how would you rate this program?	✓			

Any Suggestions to improve:

Few more SDPs in future

Puneeth

Signature of the Student

Sri Krishnadevaraya Educational Trust's

Sir M. Visvesvaraya Institute of Technology, Bengaluru

&

Aviocian Technologies Pvt. Ltd., New Delhi

CERTIFICATE

OF PARTICIPATION

INSTITUTION'S INNOVATION COUNCIL

Aviocian

This is to certify that ~~Dr./Mr./Ms.~~ Puneeth. J *has participated in the Three Days Workshop on "DESIGN & DEVELOPMENT OF QUADCOPTER DRONE FOR PAYLOAD DELIVERY" organized by the Department of Mechanical Engineering at Sir M. Visvesvaraya Institute of Technology, Bengaluru from 15th Dec. 2022 to 17th Dec. 2022.*

A J. Arun Jeya Prakash	**Dr. K .S. Shanmukharadhya**	**Prof. Rakesh S C**
Director & CEO Aviocian Technologies Pvt. Ltd	Prof. & Head, Dept of Mech Engg. Sir MVIT	Principal Sir MVIT

IQAC COORDINA
SIR M. VISVESVARAYA INSTITUTE
BENGALURU

Coordinators: Dr. V. Shantha, K. Ejaz Ahmed, Janardhana K, Asha Rani A

Sir M. Visvesvaraya Institute of Technology, Bengaluru-562157

Department of Mechanical Engineering

Date: 20-06-2023

SUBMITTED TO THE PRINCIPAL:

Subject: Permission to organize Four Day Student Development Programme during 26/06/2023 to **30/06/2023- Tentatively.**

Purpose/Justification of SDP: With respect to the above subject the following coordinators from Department of Mechanical Engineering would like to organize Four day student development program in the department of Mechanical Engineering on "REAL-WORLD MACHINE LEARNING APPLICATIONS - DEVELOPMENT & DEPLOYMENT" *in association with M/S Aqmenz Automation Pvt. Ltd.,, Bengaluru-32 for 4th & 6th semester mechanical engineering students. M/S Aqmenz Automation Pvt. Ltd.,has been identified as resource company in giving successful hands on training in Machine Learning & its applications. They have also given successful training at various universities/ institution like M S Ramaiah Institute of Technology, Reva university, Nitte Meenakshi Institute of Technology, Gitam, JSSATEB, BMSIT, EWIT, Sapthagiri engineering college, Acharya Institutes etc.*

The objective of this SDP is mainly to focus on training of students to develop coding skills in Machine Learning with hands on session. Machine Learning is a branch of Artificial Intelligence (AI) which focuses on the use of data and algorithms to imitate the way that humans learn, gradually improving its accuracy. This particular programme will be very helpful for mechanical engineering students studying subjects like mechatronics and also for the students who take up inter-disciplinary subjects under open electives schemes. Student will get benefitted in terms of knowledge & skills which will help them to undertake various mechatronics based innovative projects. Keeping this in mind, this particular student development programme has been identified.

The details of the SDP are enclosed hereby for your kind perusal. We request you to kindly give the permission to conduct this Four Day SDP without involving financial assistance from the management.

Permitted

Sd/ 21/6

ME

IQAC COORDINATOR
SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY

Sri Krishnadevaraya Educational Trust

Sir M. Visvesvaraya Institute of Technology, Bengaluru-562 157

Department of Mechanical Engineering

Date: 03/07/2023

REPORT

ON

4-DAYS STUDENT DEVELOPMENT PROGRAM ON "*REAL*-WORLD MACHINE LEARNING APPLICATIONS - DEVELOPMENT & DEPLOYMENT"

IN

ASSOCIATION WITH AQMENZ AUTOMATION PVT. LTD., BENGALURU

Day-1 26/06/2023 (9.00am TO 4.15PM)	
9.00AM To 9.30 AM	**STUDENT REGISTRATIONS FROM 9.00AM TO 9.30AM** **TOTAL NUMBER OF REGISTRATIONS: 74**
9.40AM To 10AM	➢ Inaugural function – Welcome address by the student Mr Puneeth – USN: ➢ Motivational address by the Head of the Department Dr K S Shanmukharadhya ➢ Introduction to the program by Mr. Mohammad Azar, Resource person ➢ Vote of Thanks Dr G Balakumar, Assoc. Prof., Faculty coordinator
10AM To 10.15AM	**Teak Break**
Forenoon Session:10.15AM TO 12.50PM	
10.15 AM To	What is Machine Learning & its Applications, Anaconda & Spider IDE Installation, Numpy Library: Numpy arrays, Mathematical & statistical functions,

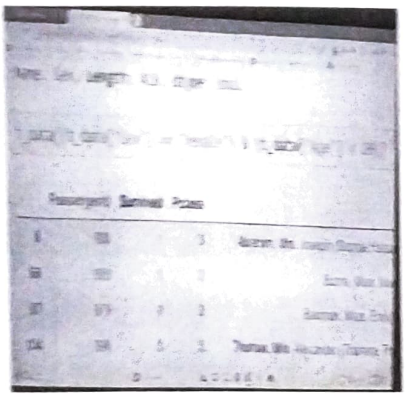
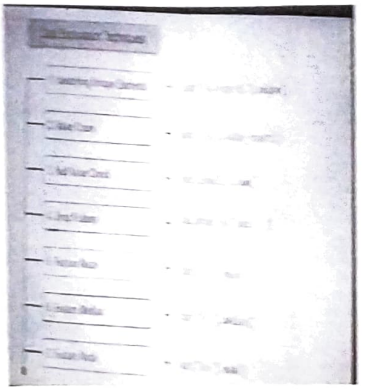
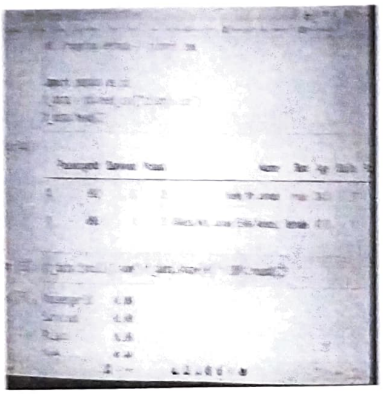
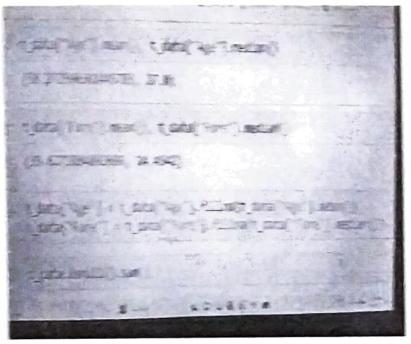
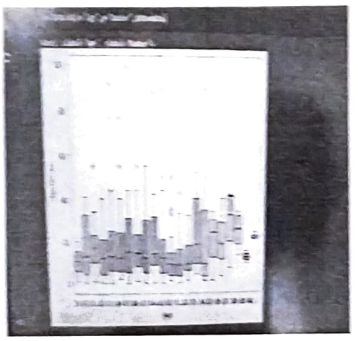
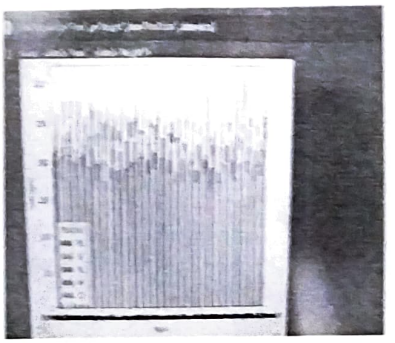
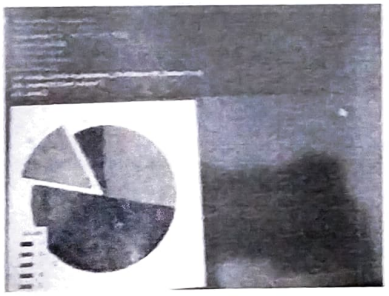
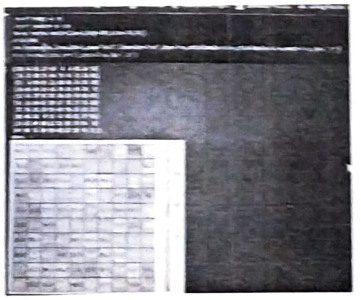
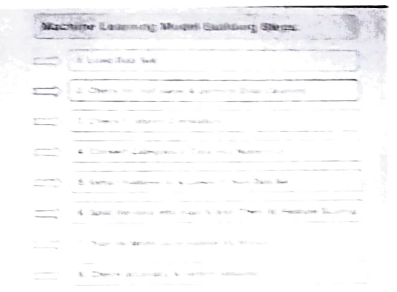
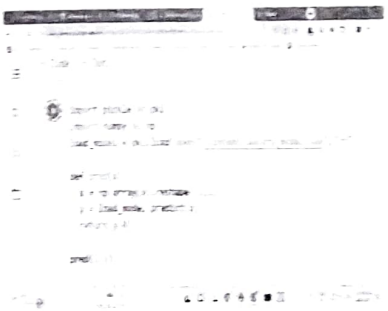
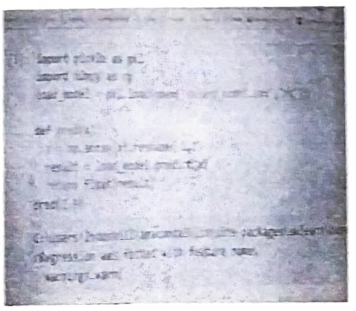
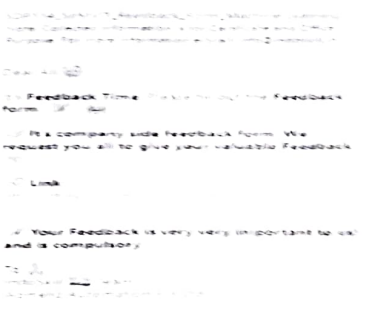
12.50PM	Pandas Library: Series & Data Frames creation, Data Exploration Methods - indexing, Slicing, Filtering, Merge, Apply and concat functions
12.50AM To 1.35PM	**Lunch Break**
Afternoon Session: 1.35PM TO 4.15PM	
1.35PM To 3.00PM	Example Project1 Data Exploration & Analysis on Titanic Dataset, Matplotlib graphs: Line graph, Scatter plot, bar graph, Histogram & Pie chart, Graphs in Sea Born Library - - 1
3.00PM To 3.15PM	**Teak Break**
3.15PM To 4.15PM	Distplot, Box Plot, Countplot & Heatmap, Data wrangling in Machine Learning, Example Project2: Data cleaning of Big Mart & Titanic Dataset, Assessment

Day-2 27/06/2023	**Forenoon Session: 9.00AM TO 12.50 PM**
9.00AM To 11.00AM	Data visualization - Univariate, Bivariate & Multivariate Analysis, Feature Engineering with Practical Example, Data Encoding Methods: Labeling, One hot
11AM To 11.15AM	**Teak Break**
11.15 AM To 12.50PM	Binary with practical projects, Train Test Split in Machine Learning, Feature Scaling with Example Projects
12.50PM To 1.35PM	**Lunch Break**
Afternoon Session: 1.35PM TO 4.15PM	
1.35PM To 3.00PM	Machine Learning Models - Regression & Classification, Introduction to Regression Models - Linear Regression, Multilinear Regression, SVR
3.00PM To 3.15PM	**Teak Break**
3.00PM To 4.15PM	Project 1: Salary Prediction based on Experience, Project 2: Predictive model building for Sales based on Advertising features, Assessment - 2

Day-3 28/06/2023	**Forenoon Session: 9.00AM TO 12.50PM**
9.00AM To 11.00AM	Classification Models - Logistic Regression, Decision Tree Classifier, Random Forest, KNN, Project 3: Lung Cancer Prediction using Classification Models & Deployment
11AM To 11.15AM	**Teak Break**
11.15 AM To 12.50PM	Project 4: Classification of Iris species using SVM, KNN & Decision Tree, Git Hub Installation, GitHub Setup & Remote Repository Creation, Pushing the Repositories to GitHub Server
12.50PM To 1.35PM	**Lunch Break**
	Afternoon Session:1.35PM TO 4.15PM
1.35PM To 3.00PM	Streamlit Library installation, Introduction to Model Deployment & cloud Platforms, Model Deployment on Production Server using streamlit
3.00PM To 3.15PM	**Teak Break**
3.00PM To 4.15PM	Car Sales Prediction using Linear Regression & Deployment using streamlet, Assessment-3,

Day-4 28/06/2023	**Forenoon Session: 9.00AM TO 12.50PM**
9.00AM To 11.00AM	Project Allocation - each student will be allocated a project, Project abstract Preperation
11AM To 11.15AM	**Teak Break**
11.15 AM To 12.50PM	Project Data collection & reading, Project code optimization,
12.50PM To 1.35PM	**Lunch Break**
Afternoon Session: 1.35PM TO 4.30 PM	
1.35PM To	Project Deployment - Streamlit or Gradio platform

GLIMSE OF THE 4-DAYS SDP

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In association with

M/s AQMENZ AUTOMATION Pvt. Ltd.

BENGALURU - 32

RESOURCE PERSONS

26th - 28th & 30th JUNE 2023

Mechanical Engineering Seminar Hall

Mr. Mohammed Azhar Hussain
Co-Founder & CTO
Aqmenz Automation Pvt. Ltd.

Mr. Mohan Shamanna
Founder & Chief Mentor
Aqmenz Automation Pvt. Ltd.

REGISTRATION FEE ₹ 1000/-

REGISTER TODAY

CONVENER

Dr. K. S. Shanmukharadhya
Prof. & Head, Dept. of ME

COORDINATORS

Dr. G. Balakumar
Assoc. Prof., Dept. of ME

Mr. Nataraj M.
Asst. Prof., Dept. of ME

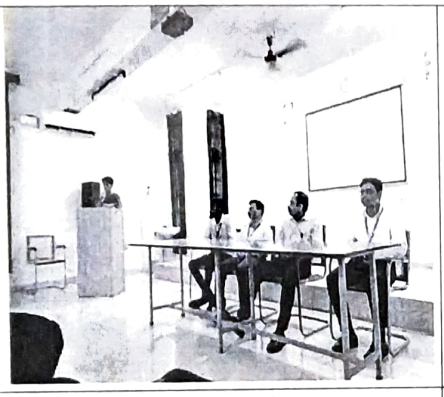
Mr. Madhukumar K.
Asst. Prof., Dept. of ME

STUDENT COORDINATORS

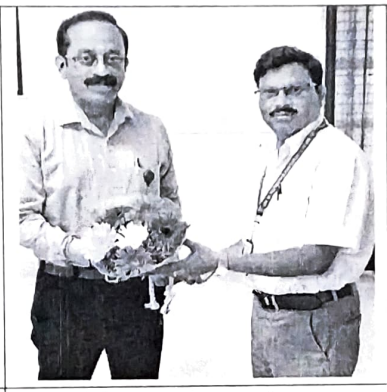
RISHIKESH
Ph. No.- 9380409116

PUNEETH J
Ph. No. - 9590577632

Poster

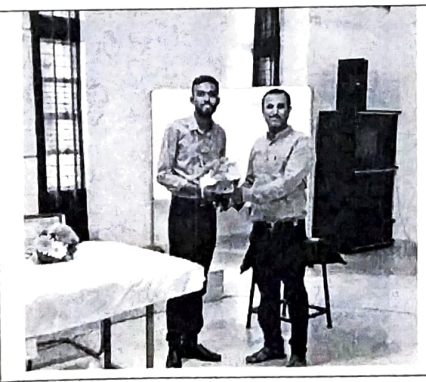


HoD, Coordinator & resource persons on dias



Welcoming Our HoD
Dr K S Shanmukharadhya

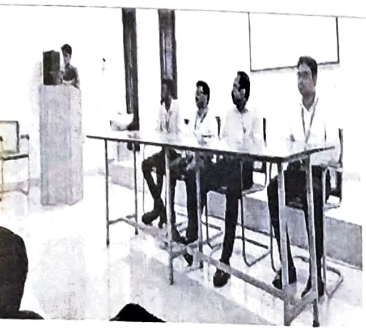
Welcoming
The resource Person
Mr. Mohammad Azhar from Aqmenz Automation Pvt. Ltd.



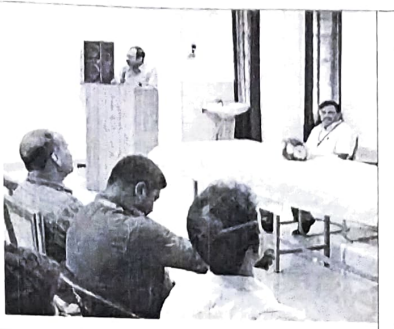
Welcoming
The resource Person
Mr. Vijay from Aqmenz Automation Pvt. Ltd.

Liting the lamp by HoD

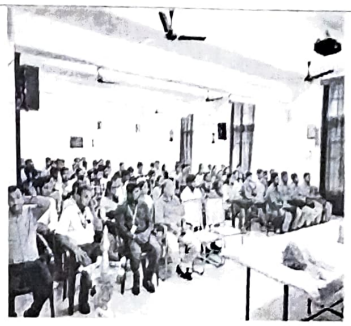
Liting the lamp by the students-participants



Welcome address by the student coordinator

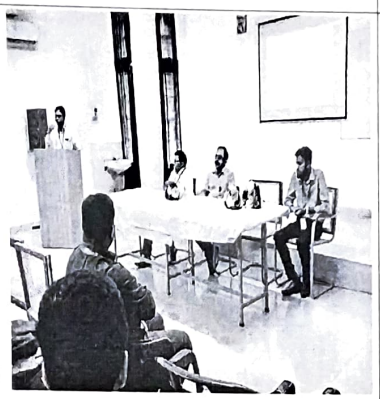


Address by the HoD

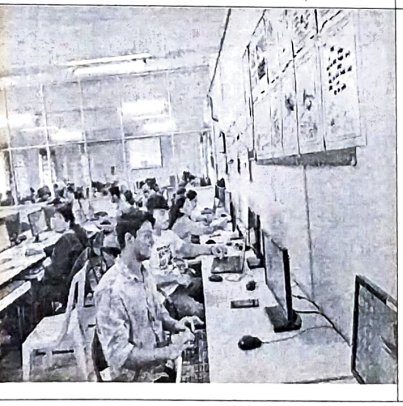


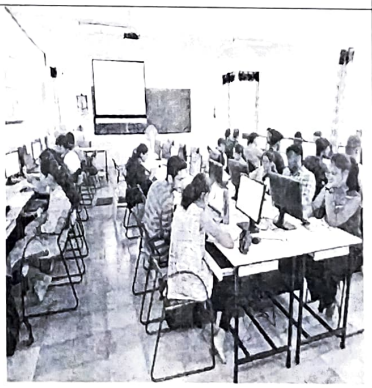
Staff & Student-Participants

ntroduction talk by the Resource Person Mr. Mohammad Azhar ,

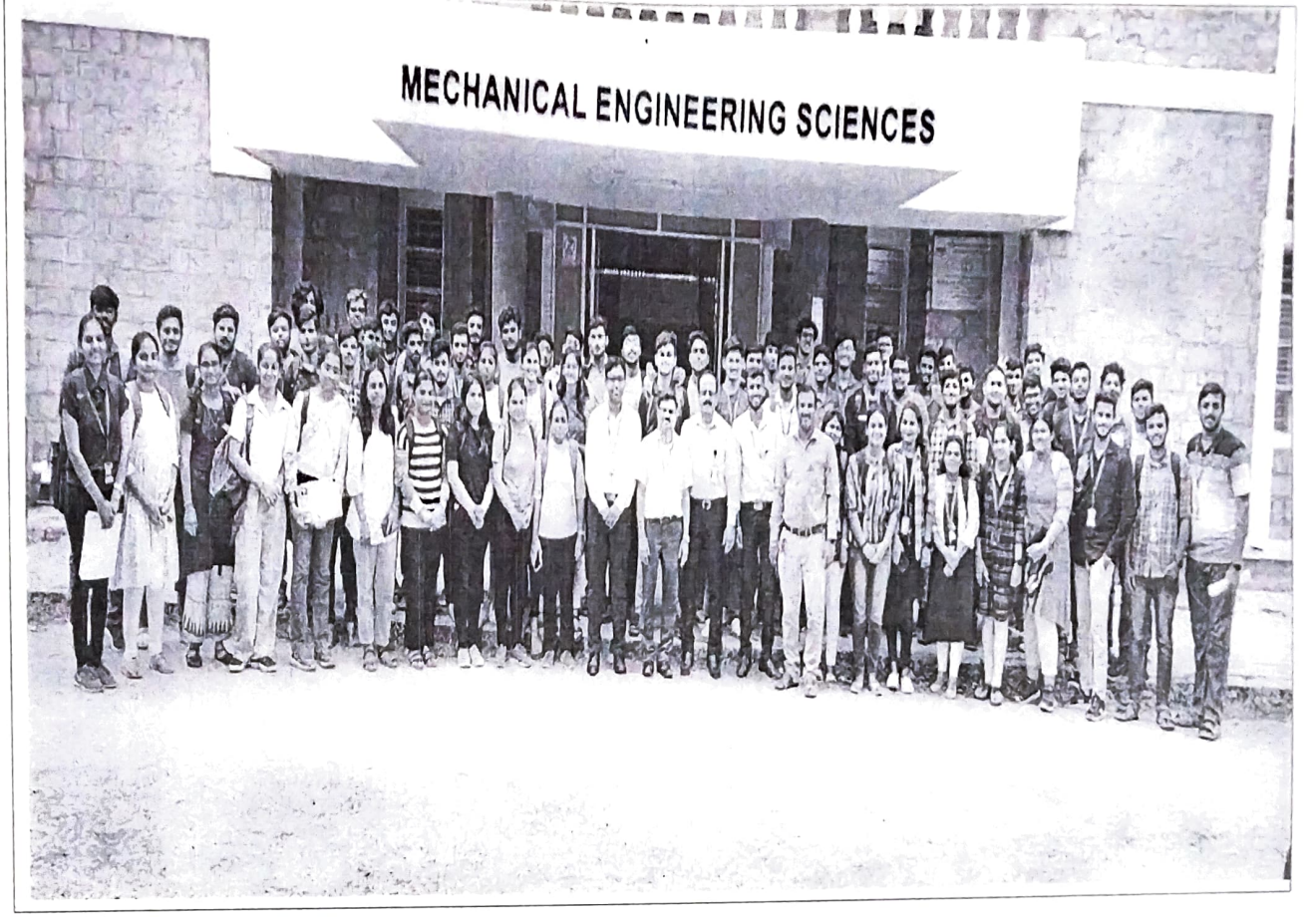


Vote of Thanks by the faculty coordinator





Hands on session



Staff- Coordinators:

Dr G Balakumar
Assoc. prof

Nataraj M
Assit. Prof.

K Madhukumar K
Assit. Prof.

12.07.2023

HoD

PROFESSOR & HEAD
Department of Mechanical Engineering
Sir M. Visvesvaraya Institute of Techonolgy
Bengaluru-562 157

IQAC COORDINATOR
SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY
BENGALURU-562157

Sir M. Visvesvaraya Institute of Technology – Bengaluru

Department of Mechanical Engineering

Date: 13.03.2023

Training Program For Faculty and Students on "NX – CAD/CAM/CAE"

Date: 14 – 18, March – 2023

Time: 10 am – 04 pm

Venue: Siemens Advanced Analysis Laboratory (M205)

Program Coordinator:

Dr. Prashant S Humnabad
PI – AICTE MODROB Project
Assistant Professor
Department of Mechanical Engineering
Sir MVIT, Bengaluru - 562157

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SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY
BENGALURU - 562 1

Event Report

Title of the Event	Training program for faculty and students on NX – CAD/CAM/CAE
Event Organizer(s)	Dr. Prashant S Humnabad, Asst. Professor, Dept. of Mechanical Engineering.
Event Venue	Siemens Advance Analysis Lab (M205), Department of Mechanical Engineering.
Event Start Date	14.03.2023
Event End Date	18.03.2023

Event Objectives

Hands on Training on NX – CAD/CAM/CAE Tools

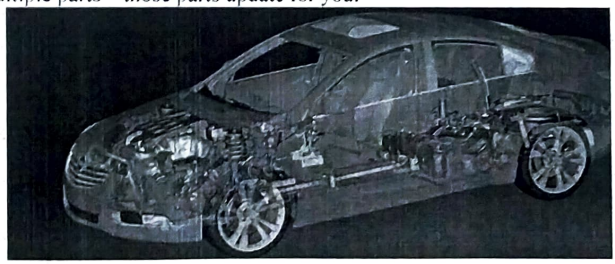
NX CAD empowers designers to achieve faster results using more virtual product models and fewer, costly, physical prototypes. This powerful and flexible product development solution delivers products "right to the market, first time."

1. Assemblies

Multiple automotive suppliers and industrial design firms have reported a reduction in design time by 50%, and some up to 65%. NX has led to a reduction in the number of design recycles, as well as better analysis.

Assembly design is one key factor in reducing design time. With so many different parts working together, NX gives you the flexibility to work top-down or bottom-up, and access any part of the hierarchy.

And, with a "design in context" approach, you can quickly test ideas and new designs without changing multiple parts—those parts update for you.

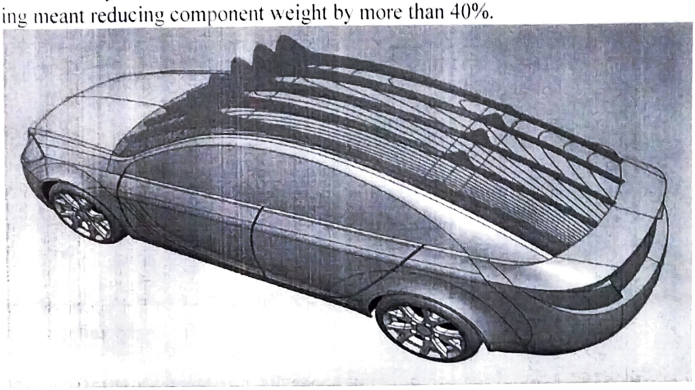


2. Modeling

Powerful, innovative modeling tools are a must for creating the multiple surfaces of a car body.

NX supports modeling of both complex surfaces and solid models, and has more advanced freeform modeling capabilities.

For one company specializing in advanced composites-based vehicles, modeling in NX means faster analysis and faster design iterations and alternatives. That improvement in modeling meant reducing component weight by more than 40%.



3. Shape Design

Think about the different shapes, curves and cuts necessary in making a car today. How are side mirrors formed? Spoilers? Or the unique look of some hoods and doors?

NX Realize Shape software is dynamic and intuitive: you can create new shapes based on simple designs just by extruding, sweeping, lofting and revolving its features. You also have freeform shape design, similar to the freeform modeling capabilities. You can use simple tools to create quick concepts for initial design intent, then edit from there. This includes creating curves on surfaces and direct surface modeling.

4. Rendering

Render designs and design changes before manufacturing them. You can use specific real-world materials that features will be made from.

With unique rendering capabilities, you can skip costly prototyping steps, shortening design cycles. Using NX for design and Teamcenter for data management, one major automobile manufacture improved their development cycle from 20 months to 10.5 months, and found that there were 80% fewer issues after vehicles were released.

High-quality rendering tools allow you to communicate your designs clearly and create images that can be used throughout design and manufacturing processes. This ensures that all team members are efficient and accurate in their communication.

5. Sheet Metal Design

Create sheet metal component models using specific, feature-based tools for tabs, flanges and other necessary features. Sheet metal tools can be used to generate accurate flat pattern data for downstream applications from solids, sheets and wireframe geometry.

NX offers high-performance modeling, drafting and assembly design- powered by Synchronous Technology -that can't be beat. The product design tools, as well as potential data management capabilities, make this a complete solution, from design to production.

Name of the Event Coordinator(s): Dr. Prashant S Humnabad
Designation: Assistant Professor

Signature:

Name of the Event Chair/HoD: Dr. K S Shanmukharadhya
Designation: - HOD - MED

Signature:

PROFESSOR & HEAD
Department of Mechanical Engineering
Sir M. Visvesvaraya Institute of Technology
Bengaluru-562 157

Related photographs

NX-CAD hands on session

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BENGALURU - 562 157

Sri Krishnadevaraya Educational Trust

Sir M. Visvesvaraya Institute of Technology, Bengaluru-562 157

Department of Mechanical Engineering

2022_23

Sl.No	USN	STUDENT NAME	Enrolled for SDP/Course/ etc	Date
1	1MV20ME008	Bharatha H S	Auto Desk Fusion 360	01.06.2023-10.07.2023
2	1MV20ME024	Mallikarjan Sajjan	Auto Desk Fusion 360	01.06.2023-10.07.2023
3	1MV20ME025	Mayur Prakash	Auto Desk Fusion 360	01.06.2023-10.07.2023
4	1MV20ME044	Venkatesh	Auto Desk Fusion 360	01.06.2023-10.07.2023
5	1MV21ME440	Sumeet Hugar	Auto Desk Fusion 360	01.06.2023-10.07.2023
6	1MV20ME006	Anup Nirmal Abraham	Auto Desk Fusion 360	01.06.2023-10.07.2023

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CERTIFICATE OF COMPLETION

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SUPREET PRASAD
NAME

3D CAD/CAM DESIGN
COURSE TITLE

FUSION 360 NEW
PRODUCT

SREEJITH K
INSTRUCTOR

01-JUNE-2023
COURSE DATE

41-100 HOURS
COURSE DURATION

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41-100 HOURS
COURSE DURATION

CADCENTER, INDIAN EDUCATIONAL ENTERPRISES (P) LTD.
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PROFESSOR & HEAD
Department of Mechanical Engineering
Sir M. Visvesvaraya Institute of Technology
Bengaluru-562 157

SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY
Bengaluru-562157

Department of Computer Science & Engineering

2022-23

Sl. No.	Name of SDP	Date(From-to)	Number of students enrolled for the Course
1	Workshop On IoT	11-04-23 to 13-04-23	116

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BENGALURU - 562 157

PROF & HEAD
DEPARTMENT OF COMPUTER SCIENCE & ENGG
Sir M Visvesvaraya Institute of Technology
Hunasamaranahalli Off International Air Port Road,
Bangalore-562 157.

SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

ACTIVITY REPORT ON

HANDS ON STUDENT DEVELOPMENT PROGRAM ON "INTERNET ON THINGS"

11^{TH}, 12^{TH} & 13^{TH} APRIL 2023

ACADEMIC YEAR 2022-2023

SIR M VISVESVARAYA INSTITUTE OF TECHNOLOGY

BANGALORE

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Ref.No: Dept. of CSE. / 2TY /2022-23 Date: 16 -02-2023

The Principal,
Sir MVIT, Bengaluru-562157.

DEPT. OF COMPUTER SCIENCE & ENGG. No. 294 Date 16/02/2023 Sir MVIT., Bangalore-51

Respected Sir,

Sub: Permission to conduct Student Develop Programme on IOT-reg.

With reference to above subject, the department is planning to organize student development programme on IOT as per the curriculum requirement dated on 23rd and 24th February 2023. Kindly request to give permission for organizing SDP on IOT.

This is for your kind information and perusal.

Thanking you

yours faithfully

Dr. T.N Anitha
Prof& Head.
Dept of CSE,
Sir MVIT.

Permitted
20/2/2023
PRINCIPAL
SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY
Krishnadevarayanagar, Hunasamaranahalli,
International Airport Road, Bangalore-562 157.

PROF & HEAD
DEPARTMENT OF COMPUTER SCIENCE & ENGG
Sir M. Visvesvaraya Institute of Technology
Hunasamaranahalli, Off International Air Port Road,
Bangalore-562157.

Encl : Quotation

IQAC COORDINATOR
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INSTITUTION'S INNOVATION COUNCIL

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING
PRESENTS

STUDENT DEVELOPMENT PROGRAM ON "INTERNET OF THINGS"

DATE : 11-12-13 APRIL 2023
VENUE : CS SEMINAR HALL

BY

Dr. Sreenivasa Setty

CTO
SST Technologies Bangalore

SCAN TO JOIN

Organizers
Dr. Savita Chaudhary
Mr. Suraj Kumar BP

Convenver
Dr. T.N Anitha
Professor & HOD

SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY
Bengaluru-562157
Department of Computer Science & Engineering

2022-23

Sl.No	USN	STUDENT NAME	Enrolled for SDP	Date(from and to)
1	1MV19CS001	AAKASH TYAGI	Workshop On IoT	11-04-23 to 13-04-23
2	1MV19CS002	ABHIGYAN SINGH	Workshop On IoT	11-04-23 to 13-04-23
3	1MV19CS003	ABHISHEK SINGH	Workshop On IoT	11-04-23 to 13-04-23
4	1MV19CS004	ADARSH SANGAM	Workshop On IoT	11-04-23 to 13-04-23
5	1MV19CS005	ADARSHA S V	Workshop On IoT	11-04-23 to 13-04-23
6	1MV19CS006	ADITI SINGH	Workshop On IoT	11-04-23 to 13-04-23
7	1MV19CS007	ADITYA	Workshop On IoT	11-04-23 to 13-04-23
8	1MV19CS008	AKARSH MISHRA	Workshop On IoT	11-04-23 to 13-04-23
9	1MV19CS009	AKARSH N	Workshop On IoT	11-04-23 to 13-04-23
10	1MV19CS010	AKHIL S	Workshop On IoT	11-04-23 to 13-04-23
11	1MV19CS011	ALVAKONDA KRISHNA SAI	Workshop On IoT	11-04-23 to 13-04-23
12	1MV19CS012	AMITH G	Workshop On IoT	11-04-23 to 13-04-23
13	1MV19CS013	ANANYA PRIYA	Workshop On IoT	11-04-23 to 13-04-23
14	1MV19CS016	ANURAG YADAV	Workshop On IoT	11-04-23 to 13-04-23
15	1MV19CS017	ANUSHA GUPTA	Workshop On IoT	11-04-23 to 13-04-23
16	1MV19CS018	ANUSHKA AMAN	Workshop On IoT	11-04-23 to 13-04-23
17	1MV19CS020	ARATHI M	Workshop On IoT	11-04-23 to 13-04-23
18	1MV19CS021	ARAVIND GUDAPATI	Workshop On IoT	11-04-23 to 13-04-23
19	1MV19CS022	ARJUN A	Workshop On IoT	11-04-23 to 13-04-23
20	1MV19CS023	ARJUN GARG	Workshop On IoT	11-04-23 to 13-04-23

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Bengaluru-562157

Department of Computer Science & Engineering

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9	1MV19CS009	AKARSH N	Workshop On IoT	11-04-23 to 13-04-23
10	1MV19CS010	AKHIL S	Workshop On IoT	11-04-23 to 13-04-23
11	1MV19CS011	ALVAKONDA KRISHNA SAI	Workshop On IoT	11-04-23 to 13-04-23
12	1MV19CS012	AMITH G	Workshop On IoT	11-04-23 to 13-04-23
13	1MV19CS013	ANANYA PRIYA	Workshop On IoT	11-04-23 to 13-04-23
14	1MV19CS016	ANURAG YADAV	Workshop On IoT	11-04-23 to 13-04-23
15	1MV19CS017	ANUSHA GUPTA	Workshop On IoT	11-04-23 to 13-04-23
16	1MV19CS018	ANUSHKA AMAN	Workshop On IoT	11-04-23 to 13-04-23
17	1MV19CS020	ARATHI M	Workshop On IoT	11-04-23 to 13-04-23
18	1MV19CS021	ARAVIND GUDAPATI	Workshop On IoT	11-04-23 to 13-04-23
19	1MV19CS022	ARJUN A	Workshop On IoT	11-04-23 to 13-04-23
20	1MV19CS023	ARJUN GARG	Workshop On IoT	11-04-23 to 13-04-23

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Bengaluru-562157

Department of Computer Science & Engineering

2022-23

Sl.No	USN	STUDENT NAME	Enrolled for SDP	Date(from and to)
21	1MV19CS024	ARPIT DUTT DIXIT	Workshop On IoT	11-04-23 to 13-04-23
22	1MV19CS025	ARTHIK SHETTY	Workshop On IoT	11-04-23 to 13-04-23
23	1MV19CS027	AYSIRI CHIDANANDA	Workshop On IoT	11-04-23 to 13-04-23
24	1MV19CS030	B AMAAN AHMED	Workshop On IoT	11-04-23 to 13-04-23
25	1MV19CS031	BADAL RATHI	Workshop On IoT	11-04-23 to 13-04-23
26	1MV19CS032	BHARGAVI	Workshop On IoT	11-04-23 to 13-04-23
27	1MV19CS033	BHAVANA BHASKAR HEGDE	Workshop On IoT	11-04-23 to 13-04-23
28	1MV19CS034	C CHITHRA LEKHA	Workshop On IoT	11-04-23 to 13-04-23
29	1MV19CS035	CHAITANYA KRISHNA PEDDI	Workshop On IoT	11-04-23 to 13-04-23
30	1MV19CS036	CHAMARTHI OM NAGA SAI MANI PAVAN	Workshop On IoT	11-04-23 to 13-04-23
31	1MV19CS038	CHANDRASHEKAR	Workshop On IoT	11-04-23 to 13-04-23
32	1MV19CS039	CHINMAYI	Workshop On IoT	11-04-23 to 13-04-23
33	1MV19CS040	DIVYA DRISHTI	Workshop On IoT	11-04-23 to 13-04-23
34	1MV19CS041	EKANT	Workshop On IoT	11-04-23 to 13-04-23
35	1MV19CS042	G SATISH	Workshop On IoT	11-04-23 to 13-04-23
36	1MV19CS043	GANNE BHANUTEJA	Workshop On IoT	11-04-23 to 13-04-23
37	1MV19CS044	GAURAV KUMAR	Workshop On IoT	11-04-23 to 13-04-23
38	1MV19CS045	GAURAV V SALGAONKAR	Workshop On IoT	11-04-23 to 13-04-23
39	1MV19CS046	GORLA VANDANA	Workshop On IoT	11-04-23 to 13-04-23
40	1MV19CS047	HARIPRIYA DG	Workshop On IoT	11-04-23 to 13-04-23

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Sl.No	USN	STUDENT NAME	Enrolled for SDP	Date(from and to)
41	1MV19CS048	HARSHINI C M	Workshop On IoT	11-04-23 to 13-04-23
42	1MV19CS049	HARSHLEEN KAUR	Workshop On IoT	11-04-23 to 13-04-23
43	1MV19CS050	HITESH A	Workshop On IoT	11-04-23 to 13-04-23
44	1MV19CS051	INDU J A	Workshop On IoT	11-04-23 to 13-04-23
45	1MV19CS052	ISHAN PATNI	Workshop On IoT	11-04-23 to 13-04-23
46	1MV19CS053	JYOTSNA A PATEL	Workshop On IoT	11-04-23 to 13-04-23
47	1MV19CS054	K KANCHANA	Workshop On IoT	11-04-23 to 13-04-23
48	1MV19CS055	K KAVYA	Workshop On IoT	11-04-23 to 13-04-23
49	1MV19CS056	KAVITA BASAPPA MELMARI	Workshop On IoT	11-04-23 to 13-04-23
50	1MV19CS057	KAVYA N	Workshop On IoT	11-04-23 to 13-04-23
51	1MV19CS058	KRATIK SINGHAL	Workshop On IoT	11-04-23 to 13-04-23
52	1MV19CS060	KUNAL TAPSE	Workshop On IoT	11-04-23 to 13-04-23
53	1MV19CS061	KURUBA GEETHIKA	Workshop On IoT	11-04-23 to 13-04-23
54	1MV19CS062	KUSHAL S K	Workshop On IoT	11-04-23 to 13-04-23
55	1MV19CS064	M R HARIKRISHNA	Workshop On IoT	11-04-23 to 13-04-23
56	1MV19CS065	M S SUDHIR SRINIVAS	Workshop On IoT	11-04-23 to 13-04-23
57	1MV19CS066	M SHREYA	Workshop On IoT	11-04-23 to 13-04-23
58	1MV19CS070	MOHAMMED AMMAR AHMED TAHA	Workshop On IoT	11-04-23 to 13-04-23
59	1MV19CS072	MOHITH AN	Workshop On IoT	11-04-23 to 13-04-23
60	1MV19CS073	MONIKA N	Workshop On IoT	11-04-23 to 13-04-23

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Sl.No	USN	STUDENT NAME	Enrolled for SDP	Date(from and to)
61	1MV19CS074	MUKUND PAREEK	Workshop On IoT	11-04-23 to 13-04-23
62	1MV19CS075	NANDAN R	Workshop On IoT	11-04-23 to 13-04-23
63	1MV19CS076	NIDHI R SHETTY	Workshop On IoT	11-04-23 to 13-04-23
64	1MV19CS077	NIHARIKA S	Workshop On IoT	11-04-23 to 13-04-23
65	1MV19CS078	NIRMAL SINGH	Workshop On IoT	11-04-23 to 13-04-23
66	1MV19CS079	NISHANTH R	Workshop On IoT	11-04-23 to 13-04-23
67	1MV19CS080	PABBATHI JAHNAVI	Workshop On IoT	11-04-23 to 13-04-23
68	1MV19CS081	PAVITRA RAMACHANDRA GOUDA	Workshop On IoT	11-04-23 to 13-04-23
69	1MV19CS082	PIYUSH VERMA	Workshop On IoT	11-04-23 to 13-04-23
70	1MV19CS084	PRAJWAL	Workshop On IoT	11-04-23 to 13-04-23
71	1MV19CS085	PRAKHAR	Workshop On IoT	11-04-23 to 13-04-23
72	1MV19CS087	PRUTHVI R	Workshop On IoT	11-04-23 to 13-04-23
73	1MV19CS088	PRUTHVIKA S	Workshop On IoT	11-04-23 to 13-04-23
74	1MV19CS089	R CHARAN KUMAR REDDY	Workshop On IoT	11-04-23 to 13-04-23
75	1MV19CS091	RAYANNAGARI SREEHARI	Workshop On IoT	11-04-23 to 13-04-23
76	1MV19CS092	REHAN NADEEMULLA	Workshop On IoT	11-04-23 to 13-04-23
77	1MV19CS093	RISHITA GOYAL	Workshop On IoT	11-04-23 to 13-04-23
78	1MV19CS094	SAMPAT KUNDANAGAR	Workshop On IoT	11-04-23 to 13-04-23
79	1MV19CS096	SATYAM SHREE	Workshop On IoT	11-04-23 to 13-04-23
80	1MV19CS097	SAYAN SADHUKHA	Workshop On IoT	11-04-23 to 13-04-23

Sl.No	USN	STUDENT NAME	Enrolled for SDP	Date(from and to)
81	1MV19CS098	SERENE JOSHI	Workshop On IoT	11-04-23 to 13-04-23
82	1MV19CS099	SHARANYA C H	Workshop On IoT	11-04-23 to 13-04-23
83	1MV19CS100	SHAURYAM JAIN	Workshop On IoT	11-04-23 to 13-04-23
84	1MV19CS101	SHIVA SHARANYA S	Workshop On IoT	11-04-23 to 13-04-23
85	1MV19CS102	SHREY RAJ	Workshop On IoT	11-04-23 to 13-04-23
86	1MV19CS103	SHREYA RAJ	Workshop On IoT	11-04-23 to 13-04-23
87	1MV19CS104	SIDHANT KAUL	Workshop On IoT	11-04-23 to 13-04-23
88	1MV19CS105	SIIVEI KS	Workshop On IoT	11-04-23 to 13-04-23
89	1MV19CS106	SUDHIKSHA R	Workshop On IoT	11-04-23 to 13-04-23
90	1MV19CS107	SUHAS M	Workshop On IoT	11-04-23 to 13-04-23
91	1MV19CS108	SUMIT JHA	Workshop On IoT	11-04-23 to 13-04-23
92	1MV19CS109	SUNDER SINGH	Workshop On IoT	11-04-23 to 13-04-23
93	1MV19CS110	SUSMITA DEBNATH	Workshop On IoT	11-04-23 to 13-04-23
94	1MV19CS111	TADIKONDA HARSHITHA	Workshop On IoT	11-04-23 to 13-04-23
95	1MV19CS112	TANYA P BOBICHAN	Workshop On IoT	11-04-23 to 13-04-23
96	1MV19CS113	TEJASVI KANNAN	Workshop On IoT	11-04-23 to 13-04-23
97	1MV19CS114	THEJA K V	Workshop On IoT	11-04-23 to 13-04-23
98	1MV19CS115	THIPPANNAGARI THARUN KUMAR REDDY	Workshop On IoT	11-04-23 to 13-04-23
99	1MV19CS118	VARTIKA SHARMA	Workshop On IoT	11-04-23 to 13-04-23
100	1MV19CS120	VATHSALA R S	Workshop On IoT	11-04-23 to 13-04-23

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Sl.No	USN	STUDENT NAME	Enrolled for SDP	Date(from and to)
101	1MV19CS121	VATSAL JAIN	Workshop On IoT	11-04-23 to 13-04-23
102	1MV19CS123	VIKYATH SHETTY	Workshop On IoT	11-04-23 to 13-04-23
103	1MV19CS124	VINAYAKA BV	Workshop On IoT	11-04-23 to 13-04-23
104	1MV19CS125	VISHAL N M	Workshop On IoT	11-04-23 to 13-04-23
105	1MV19CS126	VIVEKANANDA SWAMI KALMAT	Workshop On IoT	11-04-23 to 13-04-23
106	1MV19CS127	VYLERI KZEKHE SHANTHANU	Workshop On IoT	11-04-23 to 13-04-23
107	1MV19CS128	YASHASWINI S	Workshop On IoT	11-04-23 to 13-04-23
108	1MV19CS129	YASHWANTH L NALLA	Workshop On IoT	11-04-23 to 13-04-23
109	1MV19CS130	YOGESH R BHANGIGOUDRA	Workshop On IoT	11-04-23 to 13-04-23
110	1MV20CS400	ABHISHEK	Workshop On IoT	11-04-23 to 13-04-23
111	1MV20CS401	KARTHICK PM	Workshop On IoT	11-04-23 to 13-04-23
112	1MV20CS403	MADHUSHREE N	Workshop On IoT	11-04-23 to 13-04-23
113	1MV20CS407	NANDINI	Workshop On IoT	11-04-23 to 13-04-23
114	1MV20CS408	PRIYA GB	Workshop On IoT	11-04-23 to 13-04-23
115	1MV20CS409	RAKESH GR	Workshop On IoT	11-04-23 to 13-04-23
116	1MV20CS410	RANJITHA SM	Workshop On IoT	11-04-23 to 13-04-23

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SST Technologies
944, 16th Cross, 1st Stage Kumara Swamy layout, Bengaluru 560078, Karnataka, India
www.ssttech.in
+91-95910 91444

Two Day's Hands-on Skill Development Program on "IoT and its Application using NodeMCU"

Program Schedule

Day-1:

9:00 am – 9.30am	Download and Install Arduino IDE Software Install the ESP 8266 board in Arduino IDE
9:30 am - 10:45 am	Introduction to SST-NodeMCU Project Board.- GPIO Pins Programming Onboard LED to Blink(GPIO2 and GPIO16)
10:45 am - 11:00 am	Tea Break
11:00 am - 12:00 pm	Interface Toggle Switch to NodeMCU (GPIO16). Write a Program in C to Control LED which is connected at GPIO15 using Toggle switch.
12:00 pm - 1:00 pm	Preliminaries of Light Dependent Resistor(LDR) Write a Program in C to read intensity of Light and display it on Serial Monitor. Implement Smart Street Light.
1:00 pm - 2:00 pm	Lunch Break
2:00 pm - 4:00 pm	Download and install Bluetooth Serial16 App. Interface **Bluetooth (HC-05) and LED** with NodeMCU. Write a Program in C to Control LED (On/Off) using **Bluetooth Serial Controller App.**

Day-2:

9:00 am – 9.30am	Introduction to Blynk Server. Download and Install Blynk App from Play Store.
9:30 am - 10:45 am	Interface DHT11 (Temperature and Humidity) Sensor with ESP8266. Write a program in C to display temperature and humidity on Serial Monitor.
10:45 am - 11:00 am	Tea Break
11:00 am - 1:00 pm	Interface LED with ESP8266 and Design Graphical User Interface (GUI) using Web Dashboard (Blynk Server) and Control LED (On/Off) using Web Dashboard.
1:00 pm - 2:00 pm	Lunch Break
2:00 pm - 4:00 pm	Interface DHT11 (Temperature and Humidity) Sensor with ESP8266. Write a program in C to display temperature and humidity on Web Dashboard. (Using Blynk Server).

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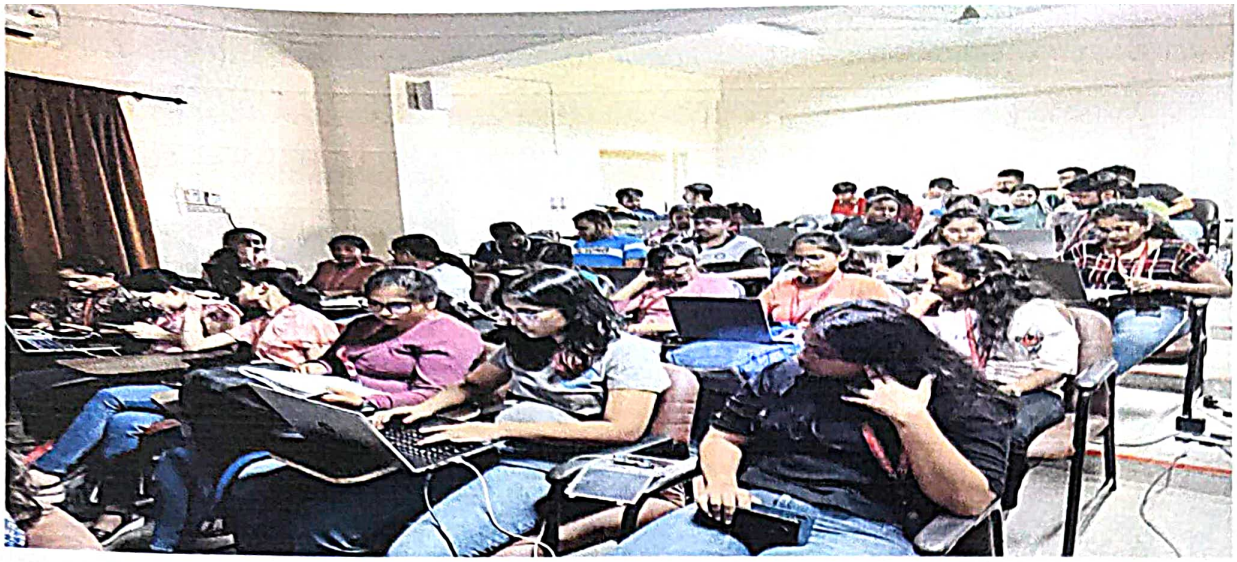

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SRI KRISHNADEVARAYA EDUCATIONAL TRUST

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(Affiliated to VTU-Belagavi, Recognized by AICTE and Accredited by NBA & NAAC)
Krishnadevarayanagar, Off International Airport Road, Hunasamarahanahalli, Bengaluru – 562 157

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

IN ASSOCIATION WITH

INSTITUTION'S INNOVATION COUNCIL (Ministry of HRD Initiative)

CERTIFICATE OF PARTICIPATION

This is to certify that SURAJ KUMAR B P ..... has participated in the 3 Days Student Development Program on "IOT" organized by the Department of Computer Science and Engineering on 11th ,12th and 13 April 2023.

DR. SREENIVASA SETTY	DR. T.N ANITHA	DR. RAKESH S G
CTO, SST Technologies	Professor and Head,Dept of CSE	Principal

Timestamp	Email Address	Score	Full Name	Department	College	Designation	If Student , USN	To what extent was the presenter knowledgeable, organized and effective in their presentation?	How might the format of this activity be improved to be most appropriate for the content presented? Select all that apply.	Please rate the overall aspects of this educational activity based on.	Educational Content	Relevance to Institution's need	Questions and Discussions	Oral Presentations	Quality of Presenters	Selection of Topics	Extent to which the content of event matched the announced	Overall Quality of the Event	Any other feedback
4/21/2023 14:57:37	surajmvit@gmail.com	0 / 1	SURAJ KUMAR B P	CSE	SIR MVIT	Faculty	NA	5	Format was Appropriate, No changes needed.		5	5	5	5	5	5	5	5	
4/21/2023 15:41:23	hod_cse@sirmvit.edu	0 / 1	DR T N ANITHA	CSE	SIR MVIT	Faculty	01	4	Format was Appropriate, No changes needed.	A	4	4	4	4	4	4	4	4	nothing
4/21/2023 16:36:39	savitha_cs@sirmvit.edu	0 / 1	DR.SAVITA CHOUDHARY	CSE	SIR MVIT	Faculty	1077	5	Schedule more time for Q and A	Excellent	5	5	5	5	5	5	5	5	
4/21/2023 16:37:02	mayuri_cs@sirmvit.edu	0 / 1	MAYURI K P	CSE	SIR MVIT	Faculty	_	5	Format was Appropriate, No changes needed.	Content is needed and knowledge improved	5	5	5	5	5	5	5	5	Good and Informative
4/21/2023 16:39:19	yogeshbhangigoudra@gmail.com	0 / 1	YOGESH R BHANGIGOUDRA	CSE	SIR MVIT	Student	1MV19CS130	3	Include more case based presentations, Increase interactivity with attendees, Add Hands on Instructional component		4	4	3	4	4	4	4	4	
4/21/2023 16:39:29	vishalnm01@gmail.com	0 / 1	VISHAL N M	CSE	SIR MVIT	Student	1MV19CS125	5	Add Breakouts for Subtopics		5	4	5	4	4	5	5	5	
4/21/2023 16:39:38	nishanthr878@gmail.com	0 / 1	NISHANTH R	CSE	SIR MVIT	Student	1MV19CS079	3	Increase interactivity with attendees, Add Breakouts for Subtopics		3	3	3	3	3	3	3	3	
4/21/2023 16:39:44	pruthviramesh.r2002@gmail.com	0 / 1	PRUTHVI R	CSE	SIR MVIT	Student	1MV19CS087	5	Format was Appropriate, No changes needed.		5	5	5	5	5	5	5	5	
4/21/2023 16:40:52	rehannadeemulla@gmail.com	0 / 1	REHAN NADEEMULLA	CSE	SIR MVIT	Student	1MV19CS092	4	Format was Appropriate, No changes needed.		4	3	4	4	4	4	4	4	
4/21/2023 16:41:15	ammargeeberns007@gmail.com	0 / 1	MOHAMMED AMMAR AHMED TAHA	CSE	SIR MVIT	Student	1MV19CS070	5	Format was Appropriate, No changes needed.	Good	5	4	4	5	4	5	5	4	The session was nice, but attaching 20 marks of IoT to it, was just awesome, easy marks, and something interesting too

Timestamp	Email Address	Score	Full Name	Department	College	Designation	if Student , USN	To what extent was the presenter knowledgeable, organized and effective in their presentation?	How might the format of this activity be improved to be most appropriate for the content presented? Select all that apply.	Please rate the overall aspects of this educational activity based on.	Educational Content	Relevance to Institution's need	Questions and Discussions	Oral Presentations	Quality of Presenters	Selection of Topics	Extent to which the content of event matched the announced	Overall Quality of the Event	Any other feedback
4/21/2023 16:47:17	kshitijgupta200@gmail.com	0 / 1	KSHITIJ GUPTA	CSE	SIR MVIT	Student	1MV19CS059	4	Include more case based presentations, Increase interactivity with attendees	Very informative and helpful , practical usages	5	4	5	4	4	4	5	5	NA
4/21/2023 16:47:29	krishnasaialvakonda@gmail.com	0 / 1	ALVAKONDA KRISHNA SAI	CSE	SIR MVIT	Student	1MV19CS011	5	Format was Appropriate, No changes needed.		4	5	4	5	4	4	5	5	
4/21/2023 16:49:51	chaitanya26peddi@gmail.com	0 / 1	CHAITANYA KRISHNA PEDDI	CSE	SIR MVIT	Student	1MV19CS035	4	Add Breakouts for Subtopics		4	4	4	4	4	4	4	4	
4/21/2023 16:51:08	pavanchamerthi03@gmail.com	0 / 1	CHAMARTHI OM NAGA SAI MANI PAVAN	CSE	SIR MVIT	Student	1MV19CS036	4	Format was Appropriate, No changes needed.		4	4	3	4	5	4	4	4	
4/21/2023 16:52:47	indu23ja@gmail.com	0 / 1	INDU J A	CSE	SIR MVIT	Student	1MV19CS051	4	Add Hands on Instructional component, Schedule more time for Q and A		4	4	4	4	4	4	4	4	
4/21/2023 16:53:38	radhika_cs@sirmvit.edu	0 / 1	R RADHIKA	CSE	SIR MVIT	Faculty	Faculty	5	Format was Appropriate, No changes needed.	Good	5	5	5	5	5	5	5	5	Good
4/21/2023 16:54:03	ayushm231@gmail.com	0 / 1	AYUSH MISHRA	CSE	SIR MVIT	Student	1MV19CS029	3	Format was Appropriate, No changes needed.	5	3	3	3	3	3	3	3	3	None
4/21/2023 16:58:43	badalrathi14@gmail.com	0 / 1	BADAL RATHI	CSE	SIR MVIT	Student	1MV19CS031	5	Format was Appropriate, No changes needed.	The overall aspects of this educational activity was outstanding.	5	5	5	5	5	5	5	5	All the things were good.
4/21/2023 16:59:12	haripriyadasari28@gmail.com	0 / 1	HARIPRIYA.DG	CSE	SIR MVIT	Student	1MV19CS047	5	Format was Appropriate, No changes needed.	5/5	5	5	5	5	5	5	5	5	
4/21/2023 17:00:20	ishanpatni01@gmail.com	0 / 1	ISHAN PATNI	CSE	SIR MVIT	Student	1MV19CS052	5	Include more case based presentations		2	2	4	1	1	5	4	1	
4/21/2023 17:00:52	dhivya_cs@sirmvit.edu	0 / 1	DHIVYA V	CSE	SIR MVIT	Faculty	-	4	Format was Appropriate, No changes needed.	Good	4	5	4	5	4	4	4	4	

Timestamp	Email Address	Score	Full Name	Department	College	Designation	if Student , USN	To what extent was the presenter knowledgeable, organized and effective in their presentation?	How might the format of this activity be improved to be most appropriate for the content presented? Select all that apply.	Please rate the overall aspects of this educational activity based on.	Educational Content	Relevance to Institution's need	Questions and Discussions	Oral Presentations	Quality of Presenters	Selection of Topics	Extent to which the content of event matched the announced	Overall Quality of the Event	Any other feedback
4/21/2023 17:35:06	supriya92_cs@sirmvit.edu	0 / 1	SUPRIYA	CSE	SIR MVIT	Faculty	No	5	Add Hands on Instructional component	5	5	5	5	5	5	5	5	5	Good session
4/21/2023 17:38:39	bhanuteja.ganne@gmail.com	0 / 1	GANNE BHANUTEJA	CSE	SIR MVIT	Student	1MV19CS043	4	Format was Appropriate, No changes needed., Include more case based presentations, Add Hands on Instructional component	Good	4	4	4	4	4	4	4	4	NA
4/21/2023 17:44:08	holladebhavana@gmail.com	0 / 1	BHAVANA BHASKAR HEGDE	CSE	SIR MVIT	Student	1MV19CS033	5	Format was Appropriate, No changes needed.		5	5	5	5	5	5	5	5	
4/21/2023 17:44:09	vandana95544@gmail.com	0 / 1	VANDANA G	CSE	SIR MVIT	Student	1MV19CS046	4	Format was Appropriate, No changes needed., Include more case based presentations	It was useful	4	4	4	4	4	4	4	4	No
4/21/2023 17:44:32	charanrapati07@gmail.com	0 / 1	R.CHARAN KUMAR REDDY	CSE	SIR MVIT	Student	1MV19CS089	4	Format was Appropriate, No changes needed., Include more case based presentations, Add Breakouts for Subtopics	Good	4	4	4	4	4	4	4	4	NA
4/21/2023 17:45:05	kavitabm075@gmail.com	0 / 1	KAVITA BASAPPA MELMARI	CSE	SIR MVIT	Student	1MV19CS056	5	Format was Appropriate, No changes needed.		5	5	5	5	5	5	5	5	
4/21/2023 17:45:58	satishgadde10@gmail.com	0 / 1	G SATISH	CSE	SIR MVIT	Student	1MV19CS042	4	Format was Appropriate, No changes needed.		4	4	4	4	4	4	4	4	
4/21/2023 17:47:24	kaurharshleen123@gmail.com	0 / 1	HARSHLEEN KAUR	CSE	SIR MVIT	Student	1MV19CS049	5	Format was Appropriate, No changes needed.	8/10	4	4	3	4	4	5	4	4	Excellent
4/21/2023 17:47:33	yaimarankhuman2000@gmail.com	0 / 1	LAISHRAM YAIMARAN KHUMAN	CSE	SIR MVIT	Student	1MV19CS063	5	Format was Appropriate, No changes needed.		5	5	5	5	5	5	5	5	

Timestamp	Email Address	Score	Full Name	Department	College	Designation	If Student , USN	To what extent was the presenter knowledgeable, organized and effective in their presentation?	How might the format of this activity be improved to be most appropriate for the content presented? Select all that apply.	Please rate the overall aspects of this educational activity based on.	Educational Content	Relevance to Institution's need	Questions and Discussions	Oral Presentations	Quality of Presenters	Selection of Topics	Extent to which the content of event matched the announced	Overall Quality of the Event	Any other feedback
4/21/2023 17:48:07	pavitragouda001@gmail.com	0 / 1	PAVITRA RAMACHANDRA GOUDA	CSE	SIR MVIT	Student	1MV19CS081	4	Format was Appropriate, No changes needed.	8/10	5	5	5	5	5	5	5	5	Nice experience
4/21/2023 17:48:29	anupchoudhary367@gmail.com	0 / 1	ANUP KUMAR	CSE	SIR MVIT	Student	1MV19CS015	5	Add Hands on Instructional component		5	5	5	4	5	5	5	5	
4/21/2023 17:49:23	yadavnandini7779@gmail.com	0 / 1	NANDINI V	CSE	SIR MVIT	Student	1MV20CS407	5	Format was Appropriate, No changes needed.	5/5	5	5	5	5	5	5	5	5	Thank you, it was more helpful for us.
4/21/2023 17:53:34	pragathi_cs@sirmvit.edu	0 / 1	PRAGATHI M	CSE	SIR MVIT	Faculty	01413	5	Increase interactivity with attendees	4	5	5	4	4	4	4	4	4	No comments
4/21/2023 18:01:30	madhushreen1524@gmail.com	0 / 1	MADHUSHREE N	CSE	SIR MVIT	Student	1MV20CS403	5	Format was Appropriate, No changes needed.	10/10	5	5	5	5	5	5	5	5	Overall good
4/21/2023 18:03:55	aakashtyagi232@gmail.com	0 / 1	AAKASH TYAGI	CSE	SIR MVIT	Student	1MV19CS001	5	Format was Appropriate, No changes needed.	5/5	5	5	5	5	5	5	5	5	
4/21/2023 18:25:19	shauryam.jain@gmail.com	0 / 1	SHAURYAM JAIN	CSE	SIR MVIT	Student	1MV19CS100	1	Format was Appropriate, No changes needed., Include more case based presentations, Add Breakouts for Subtopics, Add Hands on Instructional component		1	2	2	5	5	5	4	4	
4/21/2023 18:29:26	aditya27872014@gmail.com	0 / 1	ADITYA	CSE	SIR MVIT	Student	1MV19CS007	5	Format was Appropriate, No changes needed.		5	5	5	5	5	5	5	5	
4/21/2023 18:33:05	piyushvrm072001@gmail.com	0 / 1	PIYUSH VERMA	CSE	SIR MVIT	Student	1MV19CS082	4	Format was Appropriate, No changes needed., Add Hands on Instructional component		4	4	4	4	4	4	4	4	
4/21/2023 18:52:44	shanthanu2001@gmail.com	0 / 1	VYLERI KZEKHE SHANTHANU	CSE	SIR MVIT	Student	1MV19CS127	3	Format was Appropriate, No changes needed.	Good	3	3	3	3	3	3	3	3	No

Timestamp	Email Address	Score	Full Name	Department	College	Designation	If Student , USN	To what extent was the presenter knowledgeable, organized and effective in their presentation?	How might the format of this activity be improved to be most appropriate for the content presented? Select all that apply.	Please rate the overall aspects of this educational activity based on.	Educational Content	Relevance to Institution's need	Questions and Discussions	Oral Presentations	Quality of Presenters	Selection of Topics	Extent to which the content of event matched the announced	Overall Quality of the Event	Any other feedback
4/21/2023 18:57:15	arthikshety@gmail.com	0 / 1	ARTHIK SHETTY	CSE	SIR MVIT	Student	1MV19CS025	4	Add Hands on Instructional component		4	4	4	4	4	5	4	2	NOTHING
4/21/2023 19:10:16	sumitjhaeluga@gmail.com	0 / 1	SUMIT JHA	CSE	SIR MVIT	Student	1MV19CS108	5	Format was Appropriate, No changes needed.	Good one	5	5	5	5	5	5	5	5	Good one
4/21/2023 19:35:26	anushkaaman.418@gmail.com	0 / 1	ANUSHKA AMAN	CSE	SIR MVIT	Student	1MV19CS018	4	Add Breakouts for Subtopics		4	4	4	4	4	4	4	4	
4/21/2023 21:05:58	jahnavipabbathi812@gmail.com	0 / 1	PABBATHI JAHNAVI	CSE	SIR MVIT	Student	1MV19CS080	1	Add Hands on Instructional component, Schedule more time for Q and A, Other...	Average	1	1	1	1	1	1	1	1	
4/21/2023 21:51:16	yashaswinisraju@gmail.com	0 / 1	YASHASWINI S	CSE	SIR MVIT	Student	1MV19CS128	5	Format was Appropriate, No changes needed.		5	5	4	4	4	5	4	4	
4/21/2023 22:17:02	guptaanusha1312@gmail.com	0 / 1	ANUSHA GUPTA	CSE	SIR MVIT	Student	1MV19CS017	5	Format was Appropriate, No changes needed., Include more case based presentations, Add Hands on Instructional component		4	4	4	4	5	5	5	5	
4/21/2023 22:23:39	ananyapriya1003@gmail.com	0 / 1	ANANYA PRIYA	CSE	SIR MVIT	Student	1MV19CS013	5	Format was Appropriate, No changes needed.	It was outstanding	5	5	4	5	5	5	5	5	It was a very knowledgeable experience
4/22/2023 0:10:20	yashwanthnalla12@gmail.com	0 / 1	YASHWANTH L NALLA	CSE	SIR MVIT	Student	1MV19CS129	4	Include more case based presentations, Increase interactivity with attendees		4	5	3	3	3	2	3	3	
4/22/2023 1:01:12	atul63098@gmail.com	0 / 1	ATUL SHARMA	CSE	SIR MVIT	Student	1mv19cs026	2	Include more case based presentations	Best	4	4	4	4	4	4	5	5	Excellent
4/22/2023 7:54:34	manumokshu15@gmail.com	0 / 1	UPPUGANDLA MANOJ KUMAR	CSE	SIR MVIT	Student	1MV19CS117	4	Schedule more time for Q and A	Good	4	4	3	4	4	5	4	4	Overall it was good
4/22/2023 20:13:12	bhargavikharvi@gmail.com	0 / 1	BHARGAVI	CSE	SIR MVIT	Student	1MV19CS032	5	Include more case based presentations	Was a good experience	5	5	5	5	5	5	5	5	No

Timestamp	Email Address	Score	Full Name	Department	College	Designation	If Student , USN	To what extent was the presenter knowledgeable, organized and effective in their presentation?	How might the format of this activity be improved to be most appropriate for the content presented? Select all that apply.	Please rate the overall aspects of this educational activity based on.	Educational Content	Relevance to Institution's need	Questions and Discussions	Oral Presentations	Quality of Presenters	Selection of Topics	Extent to which the content of event matched the announced	Overall Quality of the Event	Any other feedback
4/22/2023 20:15:53	chinmayibhat01@gmail.com	0 / 1	CHINMAYI	CSE	SIR MVIT	Student	1MV19CS039	4	Increase interactivity with attendees, Add Breakouts for Subtopics, Add Hands on Instructional component		5	5	4	4	4	4	4	4	
4/22/2023 21:02:33	nidhirshetty3@gmail.com	0 / 1	NIDHI R SHETTY	CSE	SIR MVIT	Student	1MV19CS076	4	Format was Appropriate, No changes needed.	It was good	4	5	5	5	5	4	4	5	Nothing
4/23/2023 10:27:44	khushi2khanna@gmail.com	0 / 1	DIVYA DRISHTI	CSE	SIR MVIT	Student	1MV19CS040	5	Format was Appropriate, No changes needed.	10/10	5	5	5	5	5	5	5	5	It was very good
4/23/2023 11:40:44	rahulghosh070@gmail.com	0 / 1	RAHUL GHOSH	CSE	SIR MVIT	Student	1MV19CS090	4	Format was Appropriate, No changes needed.	It was quite complete in all aspects.	4	4	3	4	3	4	4	3	
4/23/2023 21:45:06	amaanahmed645@gmail.com	0 / 1	B AMAAN AHMED	CSE	SIR MVIT	Student	1MV19CS030	4	Other...		4	3	4	4	4	4	4	4	
4/24/2023 10:32:09	sayansadhukha@gmail.com	0 / 1	SAYAN SADHUKHA	CSE	SIR MVIT	Student	1MV19CS097	5	Format was Appropriate, No changes needed.	GOOD	5	5	5	5	5	5	5	5	
4/24/2023 11:08:38	arpitdixitc23@gmail.com	0 / 1	ARPIT DUTT DIXIT	CSE	SIR MVIT	Student	1MV19CS024	4	Increase interactivity with attendees, Add Hands on Instructional component	Great	5	4	4	3	5	4	4	4	

From,
Dr. Sasmita Mohapatra,
Associate Professor
Department of ECE,
Sir MVIT.

Through,
The HOD,
Department of ECE, Sir MVIT.

Tour forwarded to Hon'ble Secretary for n.o
01.08.22

PRINCIPAL
Sir M.V.I.T., Bangalore-562157.

089
21/07/22

Date: 20-07-2022

To
The Principal,
Sir MVIT.

SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY
SL. No. 1548
Date 21/7/22
BANGALORE-562 157

Respected Sir,

(Requested Budget approved by RC Rs. 36,000/- may please be sanctioned)

Sub: Seeking permission and financial assistance to conduct a 3 day inter college National Level Student Development Program – Reg.

With reference to the above subject, I would like to bring to your kind notice that Department of ECE under **IEEE Student Branch** want to conduct a 3-Day Student Development Program on "**PCB Design and Fabrication for Industrial Products**" on the dates 10th , 11th and 12th of August 2022. This program will be conducted for all the Students of circuit branches (open to ECE, TC and EEE). A total of 60 participants (45 internal candidates and 15 external candidates) both IEEE Student members and non-IEEE members from the above mentioned departments from different engineering colleges are expected to participate in the workshop. This will enable the students to design and develop their own PCB board and to perform product development. Participants will learn PCB design using DesignSpark PCB software. Each of the students will be supplied with all the equipments for designing and manufacturing of PCB with a unique circuitry.

A total expenditure of Rs.90,000/- (Ninety thousand only) is expected to incur during the workshop. A registration fee of Rs.300/- (rupees Three Hundred only) from all students is planned to be collected. ***A complete self developed PCB with mounted components will be given out to all the participants so that the students will carry out mini projects post workshop***. A Sum of Rs. 18,000/- is expected to be collected via registrations. I humbly request your good self to permit me to conduct the workshop and financially support the event with a deficit amount in the expenses to a sum of Rs. 72,000/- (Seventy Two Thousand Only).The detailed budget is been enclosed for your kind reference. This is for your kind perusal and consideration.

Thanking you sir
Yours sincerely,

Mohapatra 20.7.22
(Dr. Sasmita Mohapatra)

Recommended by RC
As per revised norms, 50% of the requested amount (Rs 72,000/-), i.e (Rs 36,000/-) may kindly be sanctioned. However the industry resource persons may be called for negotiation.

Recommended & Forwarded
21/7/2022
Head of the Department

SRI KRISHNADEVARAYA EDUCATIONAL TRUST

No. 16, Ballari Road, Sadashivanagar, Bengaluru – 560 080

Ref.No.KET/SMVIT/ 59 /2022 – 2023/453 Date: 17/08/2022

N O T E:

Sub: Financial assistance for conduct a 3 day Inter College National Level Student Development Program for Electronics students.

Ref: Letter from Dr. Sasmita Mohapatra, Associate Professor, Dept. of Electronics, dated 20/07/2022, signed by HOD and duly endorsed by the Principal No. 1548, dated 21/07/2022.

***

With reference to the above, this is to convey approval for organizing a 3-Day Student Development Programme (SDP) titled "PCB Design and Fabrication for Industrial Products" for of Electronics, Telecommunication and Electrical Engineering.

Rs. 36,000/- (Rupees Thirty Six Thousand only) is sanctioned to meet the expenditure. The amount may be drawn from the Principal's SB account and reimbursement claimed later with duly audited bills and vouchers.

(K. SYAMA RAJU)
SECRETARY

To
The Principal,
Sir MVIT,
Bengaluru.

Copy to:

1. The HOD, Dept. of Electronics, Sir MVIT, Bengaluru.
2. Dr. Sasmita Mohapatra, Associate Professor and Coordinator of the programme, Dept. of Electronics, Sir MVIT.
3. The Accounts Officer, Sri KET, Bengaluru.

By K

SRI KRISHNADEVARAYA EDUCATIONAL TRUST

No. 16, Ballari Road, Sadashivanagar, Bengaluru – 560 080

Ref.No.KET/SMVIT/ 59 /2022 - 2023/453 Date: 17/08/2022

NOTE:

Sub: Financial assistance for conduct a 3 day Inter College National Level Student Development Program for Electronics students.

Ref: Letter from Dr. Sasmita Mohapatra, Associate Professor, Dept. of Electronics, dated 20/07/2022, signed by HOD and duly endorsed by the Principal No. 1548, dated 21/07/2022.

***

With reference to the above, this is to convey approval for organizing a 3-Day Student Development Programme (SDP) titled "PCB Design and Fabrication for Industrial Products" for of Electronics, Telecommunication and Electrical Engineering.

Rs. 36,000/- (Rupees Thirty Six Thousand only) is sanctioned to meet the expenditure. The amount may be drawn from the Principal's SB account and reimbursement claimed later with duly audited bills and vouchers.

(K. SYAMA RAJU)
SECRETARY

To
The Principal,
Sir MVIT,
Bengaluru.

Copy to:

1. The HOD, Dept. of Electronics, Sir MVIT, Bengaluru.
2. Dr. Sasmita Mohapatra, Associate Professor and Coordinator of the programme, Dept. of Electronics, Sir MVIT.
3. The Accounts Officer, Sri KET, Bengaluru.

By K

Registration Form

3– Day National Level SDP on "PCB Design and Fabrication Using Innovative Methods For Industrial Products"

Name : .....

Department: .....

Institution :.....

.....

Mobile: .....

E-mail: .....

Signature of the Applicant

_____

Signature of HOD with seal

_____

Chief Patrons

Dr. A.C Chandrashekar Raju	President, Sri KET
Sri K.V Sekhar Raju	Vice President, Sri KET
Sri K Syama Raju	Secretary, Sri KET
Sri M.Venkataramana Raju	Treasurer, Sri KET
Sri G Prabhakar Raju	Academic Chairman

Organising Chair

Dr. V.R Manjunath
Principal

Convener

Dr. R. Sundaraguru
Professor & HOD ECE

Chief Co-Ordinator

Dr. Sasmita Mohapatra
Associate Professor

Co-Ordinators

Mr. R Nataraja	Associate Professor
Mrs. Seema S	Assistant Professor
Mr. Phanindar Ravi P	Assistant Professor
Mrs. Bhuvaneswari N	Assistant Professor
Mrs. Sheetal Bagali	Assistant Professor

SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY

IEEE BANGALORE SECTION

3-Day National Level SDP on "PCB Design and Fabrication Using Innovative Methods For Industrial Products"

INSTITUTION'S INNOVATION COUNCIL (Ministry of HRD Initiative)

INDIAN TECH-KEYS BORN TO INNOVATE

MoE's INNOVATION CELL (GOVERNMENT OF INDIA)

8th to 10th November 2022

Organized by Dept. of ECE, Sir MVIT
In Association with Indian Tech-Keys

SPONSORED BY

Sri Krishnadevaraya Educational Trust

SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY
(An ISO 9001:2008 Certified Institution)
International Airport Road, Krishnadevaraya Nagar,
Hunasamaranahalli, Bengaluru-562 157
Website: www.sirmvit.edu

ABOUT THE INSTITUTE

Sir M. Visvesvaraya Institute of Technology (Sir MVIT) is an Institute of repute in the state of Karnataka founded by Sri Krishnadevaraya Educational Trust (Sri KET) in 1986. The institute offers eleven B.E. degree programs in Civil, Mechanical, Electrical & Electronics, Electronics & Communication, Computer Science & Engg., Electronics & Telecommunication, Information Science, Bio Technology, AI & ML and IOT & Cyber Security and five Masters Programs. The Institute is affiliated to Visvesvaraya Technological University and approved by All India Council for Technical Education, New Delhi and is accredited by National Board of Accreditation, New Delhi. Sir MVIT is an ISO 9001:2008 Certified Institution. Sir MVIT is NAAC accredited. All the departments are approved as a recognized R & D centre by Visvesvaraya Technological University (VTU) to pursue Ph.D and M.Sc (Engg.) by Research .

ABOUT THE DEPARTMENT

The Department of ECE offers one UG Programme and one PG programme. The Department aims at transforming the students into young engineers with sound technical leadership skills, knowledge and decision making ability. Department encourages students to actively participate in co-curricular and extra curricular activities for their overall development. The Department has well qualified, experienced and dedicated faculty members who are providing excellent teaching & learning environment. The department has well equipped laboratory facilities and is recognized as R&D centre by VTU. Furthermore Texas Instruments sponsored innovative lab is established. Department excels in academics by securing university ranks in UG & PG Programs.

ABOUT THE PROGRAM

Student Development Program on "PCB Design and Fabrication using innovative methods for Industrial Products" is organized by department of Electronics and Communication Engineering. This is to create a platform for students to gain knowledge on current trends in industry. The session is designed to provide students with all the necessary tools to increase student learning and development. It will provide them with resources and activities to bridge the gaps in their learning i.e. bridging the gap between theory and concepts. Due to huge demand for Operations and Quantitative Skills in the market this workshop will develop the requisite skill level to be able to perform into the professional world.

OBJECTIVES

The objective of this program is to introduce printed circuit board designing and fabrication where participants will get exposure to DesignSpark PCB designing industrial tool (open source) and different aspects of printed circuit board designing. Prior to PCB designing, participants will rig up the circuit on breadboard for better understating of circuit functionality. Breadboard wiring will help to identify few complications in wiring which could be overcome using PCB.

COURSE CONTENTS

- Power of Design Spark PCB, Schematic Capture
- PCB Layout Design
- Fabrication of PCB boards
- Testing and trouble shooting
- Integration of Boards for Mini Project Implementation

COURSE OUTCOMES

- Concept to Product development skill.
- Exposure to Analog and Digital ICs.
- Schematics capture, PCB foot print design skill using DesignSpark (Open Source) software.
- Unit testing, Quality Check and Circuit debugging skill development.
- Clear understating of PCB fabrication process.
- Exposure to innovative product development.
- Apply techniques, skills and modern engineering tools necessary for engineering practice.

CERTIFICATE

A Certificate of participation will be issued on completion of the program

REGISTRATION DETAILS

Registration Fee:-

Rs : 400/-

Mode of payment:

GOOGLE PAY to Sheetal B: +91-9986853709

For Registration Contact :

Mrs. Sheetal B 9986853709

Sir M. Visvesvaraya Institute of Technology
Bengaluru 562 157

Student Development Program
on

PCB Design and Fabrication Using Innovative Methods
For Industrial Products
8th to 10th November 2022

Registration form

Sl. No.	Name	USN	Department & Institute	Mode of Payment	Signature
1	KAMYASHREE T	1MV20EC059	ECE, Sir MVIT	Cash	
2	Gagana R	1MV20EC048	ECE, Sir MVIT	Cash	
3	PRIYANSHU SAHAY	1MV20ET021	ETE, Sir MVIT	GPay	
4	Sheik Tanzeem	1MV20EC106	ECE, Sir MVIT	GPay	
5	Rohith G	1MV20EC101	ECE, Sir MVIT	GPay	
6	Abhishek	1MV20EC003	ECE, Sir MVIT	GPay	
7	G PAVITHRAN	1MV20EC047	ECE, Sir MVIT	GPay	
8	RAGHAVA RAKSHITH	1MV20EC038	ECE, Sir MVIT	GPay	
9	Rishabh Sharma	1MV20EC096	ECE, Sir MVIT	GPay	
10	Sushant Kumar	1MV20EC117	ECE, Sir MVIT	GPay	
11	Nachiketh kv	1MV20EC081	ECE, Sir MVIT	GPay	
12	Monish.M	1MV20EC080	ECE, Sir MVIT	GPay	
13	Lakshitha G	1MV20EC064	ECE, Sir MVIT	GPay	
14	Lavanya P	1MV20EC066	ECE, Sir MVIT	GPay	
15	Priyanshu Harsha	1MV20EC090	ECE, Sir MVIT	GPay	
16	MIHIR KUMAR SHARMA	1MV20EC075	ECE, Sir MVIT	GPay	
17	Yash Raj	1MV21EC123	ECE, Sir MVIT	GPay	
18	Likitha.P	1MV20EC069	ECE, Sir MVIT	GPay	
19	Vikas vishwakarma	1MV21EC119	ECE, Sir MVIT	GPay	
20	Rituraj Singh	1MC20EC099	ECE, Sir MVIT	GPay	
21	Pavan tej P S	1mv20ec085	ECE, Sir MVIT	GPay	
22	Tejaswini k	1MV 21EC409	ECE, Sir MVIT	GPay	
23	BHASKAR MONDAL	1MV21EC024	ECE, Sir MVIT	GPay	
24	Varshikha KV	1MV20EC123	ECE, Sir MVIT	GPay	
25	RITIK KUMAR DUBEY	1MV20EC098	ECE, Sir MVIT	GPay	
26	Niranjan Sridhar	1MV20EC126	ECE, Sir MVIT	GPay	
27	SIDDHARTHA KUMAR	1MV20EC112	ECE, Sir MVIT	GPay	
28	Pranav Raj	1MV20EC089	ECE, Sir MVIT	GPay	
29	Shubhradeep Das	1MV20EC109	ECE, Sir MVIT	GPay	
30	R SHANMUKHA SRINIVAS	1MV20EC127	ECE, Sir MVIT	GPay	
31	Mohith G S	1MV20EC077	ECE, Sir MVIT	GPay	
32	Vikas Benal	1MV20EC124	ECE, Sir MVIT	GPay	
33	NITHIN KUMAR	1MV21EC059	ECE, Sir MVIT	GPay	
34	Muttu Naik	1MV21EC051	ECE, Sir MVIT	GPay	
35	TUSHAR YADAV	1MV20EC119	ECE, Sir MVIT	GPay	
36	Suhas Kattimani	1MV21EC105	ECE, Sir MVIT	GPay	
37	Sudheendra S Kulkarni	1MV20EC116	ECE, Sir MVIT	GPay	

Sir M. Visvesvaraya Institute of Technology
Bengaluru 562 157

Sl. No.	Name	USN	Department & Institute	Mode of Payment	Signature
38	Subramaniam G	1MV20EC115	ECE, Sir MVIT	GPay	
39	Danesh khyadi	1MV21EC028	ECE, Sir MVIT	GPay	
40	Ujjwal Kumar	1MV20EC120	ECE, Sir MVIT	GPay	
41	D Mehaboob Alum	1MV21EC402	ECE, Sir MVIT	GPay	
42	Prachi sawarn	1MV20EC088	ECE, Sir MVIT	GPay	PRACHI
43	Girishreddy B	1mv20ec051	ECE, Sir MVIT	GPay	
44	Krishna Upadhyay	1MV20EC063	ECE, Sir MVIT	GPay	
45	Gulam gouse	1MV21EC403	ECE, Sir MVIT	GPay	
46	N Nandish	1MV21EC052	ECE, Sir MVIT	GPay	
47	Preetham P M	1MV21EC069	ECE, Sir MVIT	GPay	
48	Sukriya THASMEEN D	1MV20 EC118	ECE, Sir MVIT	GPay	
49	Bhaskar Reddy	1MV20EC072	ECE, Sir MVIT	GPay	
50	Likhith	1MV20EC060	ECE, Sir MVIT	GPay	
51	~~Anjana Madhavan~~ B KAVYA	1MV20EC0[illegible]	ECE, Sir MVIT	GPay	
52	Kameshwar Singh		ECE, Sir MVIT	GPay	
53	Vinith Shetty	1MV21EC121	ECE, Sir MVIT	GPay	
54	Shrutik R Chandavari	1MV21EC094	ECE, Sir MVIT	GPay	
55	Sravan Varma	1MV20EC037	ECE, Sir MVIT	GPay	
56	Monish Gowda	1MV20EC079	ECE, Sir MVIT	GPay	
57	Mithil	1MV21EC048	ECE, Sir MVIT	Cash	
58	Rishi	1MV21EC002	ECE, Sir MVIT	GPay	
59	Deepthi	1MV20EC040	ECE, Sir MVIT	Cash	
60	Dileep G C	1MV20EC045	ECE, Sir MVIT	Cash	
~~61~~	~~B KAVYA~~	~~1MV20EC082~~	~~ECE, SIR MVIT~~	~~GPAY~~	

Sir M. Visvesvaraya Institute of Technology
Bengaluru 562 157
Department of Electronics and Communication Engineering

Student Development Program

on

PCB Design and Fabrication Using Innovative Methods
For Industrial Products
8th to 10th November 2022

Feedback Form

USN: 1MV20EC063 **Date: 10/11/2022**

Name of the Participant: Krishna Upadhyay

1. The Workshop broadened the understanding of concepts and principles in the design of PCB.
   a. Strongly agree b. Agree c. Neutral d. Disagree
2. The content was relevant and improved my skills and techniques related to PCB design.
   a. Strongly agree b. Agree c. Neutral d. Disagree
3. The resource persons knowledge, presentation and explanation of the topic was good
   a. Strongly agree b. Agree c. Neutral d. Disagree
4. The number of sessions for the topic was appropriate
   a. YES b. NO (if NO, how many more sessions required? _____)
5. The Hands-on sessions were well coordinated and long enough to complete the design
   a. YES b. NO
6. How do you rate the Hands-on experience during training?
   a. Excellent b. Very good c. Good d. Fair e. Poor
7. The workshop was well organized and met the expectations
   a. Strongly agree b. Agree c. Neutral d. Disagree
8. Overall, how would you rate the workshop and hospitality?
   a. Excellent b. Very good c. Good d. Fair e. Poor
9. Would you like to attend similar workshops in future?
   a. YES b. NO
10. Any Suggestions/Comments?

Student Development Program

on

PCB Design and Fabrication Using Innovative Methods For Industrial Products

8th to 10th November 2022

Feedback Form

USN: 1MV20EC94 **Date: 10/11/2022**

Name of the Participant: Lakshitha. G

1. The Workshop broadened the understanding of concepts and principles in the design of PCB.
   a. Strongly agree b. Agree c. Neutral d. Disagree
2. The content was relevant and improved my skills and techniques related to PCB design.
   a. Strongly agree b. Agree c. Neutral d. Disagree
3. The resource persons knowledge, presentation and explanation of the topic was good
   a. Strongly agree b. Agree c. Neutral d. Disagree
4. The number of sessions for the topic was appropriate
   a. YES b. NO (If NO, how many more sessions required? _____)
5. The Hands-on sessions were well coordinated and long enough to complete the design
   a. YES b. NO
6. How do you rate the Hands-on experience during training?
   a. Excellent b. Very good c. Good d. Fair e. Poor
7. The workshop was well organized and met the expectations
   a. Strongly agree b. Agree c. Neutral d. Disagree
8. Overall, how would you rate the workshop and hospitality?
   a. Excellent b. Very good c. Good d. Fair e. Poor
9. Would you like to attend similar workshops in future?
   a. YES b. NO
10. Any Suggestions/Comments?
    Embedded, IOT, workshop is required.

Sri Krishnadevaraya Educational Trust's
Sir M. Visvesvaraya Institute of Technology
Krishnadevaraya nagar, Hunasamaranahalli, International Airport Road
Bangalore-562157
Department of Electronics and Communication Engineering
PG and Research Center

National level Student Development Program on

"PCB Design and Fabrication Using Innovative Methods for Industrial Products"

in association with ***Indian Tech-Keys.***

Report

The department of Electronics & Communication Engineering, conducted three days National level SDP on ***" PCB Design and Fabrication Using Innovative Methods for Industrial Products "*** on 8th -10th November 2022 in association with Indian Tech-Keys. This SDP was sponsored by Sir KET.

The Invitation for SDP was sent to all the 4th semester students of all engineering colleges. The response was very good. Total number of participants was limited to 60 in number. The registration started on 1st November 2022.

Inauguration started at 9.45 AM in Marconi Seminar Hall. Our beloved Principal, Prof. Rakesh S. G., our Department HOD, Dr. R. Sundaraguru, our honorable Trustee Sri. Prabhakar Raju, and all other department HOD's and staff members presided the inaugural function. Prof. Rakesh S. G., Principal, Sir MVIT gave the opening remarks for his first official program organized in the college. Dr. Sasmita Mahopatra, Associate professor, Dept. of ECE, welcomed the Resource person for the program Mr. Kotresh Mundurugi and the participants. Dr. R. Sundaraguru, HOD, Dept. of ECE gave his presidential remarks and highlighted the importance of demand for Operations and Quantitative Skills in the market. Inaugural function ended with vote of thanks.

On the first day, Power of Design Spark PCB and Schematic Capture were explained. Second day, PCB Layout Design and hands on Fabrication of PCB Boards were done by forming teams for different circuit designs. On Third day of

the program Testing and Troubleshooting of the designed PCB boards were done and Integration of Boards for Mini Project Implementation was detailed.

This SDP created a platform for students to gain knowledge on current trends in industry. The session was designed to provide students with all the necessary tools to increase student learning and development, bridging the gap between theory and concepts.

The feedback received from participants was very good towards SDP. All three sessions were very informative; also queries raised from the participants were clarified. The three days SDP was conducted successfully.

Chief Co-Ordinator

Dr. Sasmita Mohapatra, Associate Professor

Faculty Coordinators

Mr. R Nataraja, Associate Professor
Mrs. Seema S, Assistant Professor
Mr. Phanindar Ravi P, Assistant Professor
Mrs. Bhuvaneswari N, Assistant Professor
Mrs. Sheetal Bagali, Assistant Professor

Dr. R Sundaraguru,
Professor & HOD, Department of ECE

Sri Krishnadevaraya Educational Trust's

Sir M. Visvesvaraya Institute of Technology

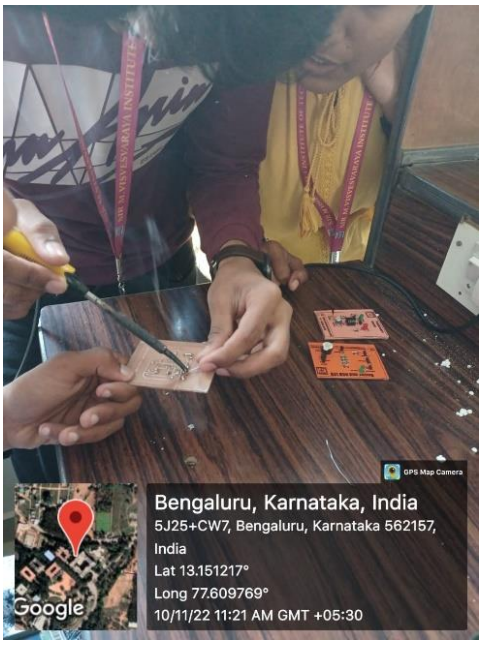
Krishnadevaraya nagar, Hunasamaranahalli, International Airport Road,
Bangalore-562157

Department of Electronics and Communication Engineering
PG and Research Center

National level Student Development Program on

"PCB Design and Fabrication Using Innovative Methods for Industrial Products"

in association with ***Indian Tech-Keys*.**

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Bengaluru, Karnataka, India
5J25+CW7, Bengaluru, Karnataka 562157, India
Lat 13.151139°
Long 77.609826°
10/11/22 11:24 AM GMT +05:30
Google


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Lat 13.151057°
Long 77.6102°
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10/11/22 11:22 AM GMT +05:30
Google

Sir M. VISVESVARAYA INSTITUTE OF TECHNOLOGY

Bengaluru -562157

Department of Electronics and Communication Engineering

in association with

Indian Tech-Keys

CERTIFICATE

PRESENTED TO

YASH RAJ (1MV21EC123)

For successfully completing 3 Days National Level SDP on "**PCB Design and Fabrication Using Innovative Methods For Industrial Products**" Organized by the Department of Electronics and Communication Engineering from 08/11/2022 to 10/11/2022.

Mr. Kotresh Mundrugi	Dr. R. Sundaraguru	Prof. Rakesh S.G.
(Director) INDIAN TECH-KEYS	Professor & HOD, ECE	Principal

J A I V I K

SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY
BANGALORE 562 157
DEPARTMENT OF BIOTECHNOLOGY

CORDIALLY INVITES ONE & ALL

To the Inaugural Popular Talk
On

Innovations and Entrepreneurial Opportunities in Phytopharmaceuticals

Himalaya™
WELLNESS SINCE 1930

As part of the
5th Integrative Workshop on
"Recent Advances and Emerging Applications of Phytopharmaceuticals"

Being Conducted In association with
The Himalaya Drug Company, Bengaluru
During
November – December 2022
(On All Saturdays)

Speaker:

Dr. U V Babu
Head, The Himalaya Drug Company,
Bengaluru

Date and Time:

4th November 2022, 11 AM to 12noon

Venue:

BT Seminar Hall

All staff 3/11

3/11/22

3/11/2022

3/11/2022

3/11/22

3/11/22

3/11/2022

3/11/22

3/11/22

SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY
BANGALORE 562 157
DEPARTMENT OF BIOTECHNOLOGY

5th Integrative workshop on "The Recent advances in Phytopharmaceuticals & drug discovery – an Industrial Application" 5th Nov – 3rd Dec 2022.

Being Conducted In association with
The Himalaya Drug Company, Bengaluru

Schedule

Week and Date	Module	Subjects	Time	Faculty coordinator
		Workshop Inaugural lecture by Dr UV Babu	11AM -12noon	Dr KVR
Week 1 5/11/2022	Module 1	Drug Discovery & introduction to ISM	9.15 – 11.30	Dr KVR
	Module 2	Pharmacognosy; Biodiversity; GACP Practical- Module 2	11.35 - 1.00 2.00- 3.30	Dr KVR
Week 2 12/11/2022	Module 3	Analytical development for RM identification	9.15 -11.30	Dr CR
	Module 4	Cell & Mol Biology techniques in Natural products Practical- Module 3	11.35- 1.00 2.00 -3.30	Dr KVR
Week 3 19/11/2022	Module 5	Application of Microbiology in Natural products and its safety studies	9.15 -11.30	Dr KVR
	Module 6	Advantages of Plant Biotechnology in Herbal industries Practical- Module 6	11.35- 1.00 2.00-3.30	Dr KVR
Week 4 26/11/2022	Module 7	Introduction to Phytochemistry, Extraction & Isolation of Bioactive compounds	9.15 -11.30	Dr CR
	Module 8	Principles of HPLC, LC-MS and its application. spectrophotometer techniques for the identification of Bioactive. Practical Module 7 &8	11.35- 1.00 2.00 -3.30	Dr CR
Week 5 3/12/2022	Module 9	Introduction of Process Eng. Advanced techniques in Pilot scale production.	9.15 -11.30	Dr CR
		Project Idea presentation -11.30 – 12.30 **Valedictory – 12.30 to 1.30**		Dr CR and Dr KVR

Rajendra Singh and Rashmi K V
Associate Professors & Workshop Co-ordinators

3/11/2022

2/11/2022

H G Nagendra
Dr H.G. Nagendra
Professor & Head
Department of Biotechnology
Sir M. Visvesvaraya Institute of Technology
BANGALORE - 562157

SIR M VISVESVARAYA INSTITUTE OF TECHNOLOGY
HUNASAMARANAHALLI, VIA: YELAHANKA, BANGALORE – 562 157

DEPARTMENT OF BIOTECHNOLOGY

5th Integrative workshop on "The Recent advances in Phytopharmaceuticals & drug discovery an Industrial Application" 5th Nov – 3rd Dec 2022.

Being Conducted In association with

The Himalaya Drug Company, Bengaluru

Attendance Sheet

Sl No	USN	NAME	5/11	12/11	19/11	26/11	3/12						
1.	1MV19BT001	AASHITHA C SHEKAR	1	2	3	3	4						
2.	1MV19BT002	ACHYUTH S V	1	2	3	4	5						
3.	1MV19BT003	ADVAITH K G	1	1	1	2	3						
4.	1MV19BT004	APARNA B S	1	2	3	3	3						
5.	1MV19BT005	CHATURHTY	1	2	3	4	4						
6.	1MV19BT006	DEEPIKA BHAT	0	1	2	3	3						
7.	1MV19BT007	EMILEE GRACIA DOMNIC	1	2	3	3	4						
8.	1MV19BT008	GOWDA SNEHA DEVE	1	2	3	3	3						
9.	1MV19BT009	GURURAJ A	1	1	1	1	1						
10.	1MV19BT010	K HRUTHIK KUMAR RAJU	1	2	3	4	5						
11.	1MV19BT011	KAVYA BAI O P	1	2	3	4	5						
12.	1MV19BT012	MADHUMITHA K	1	2	3	4	4						
13.	1MV19BT013	MAHALAKSHMI N	1	2	3	4	4						
14.	1MV19BT014	MAITHRI B M	1	2	3	4	5						
15.	1MV19BT015	NAGASHREE S	1	2	3	4	5						
16.	1MV19BT016	NIHARIKA K S	1	2	2	3	3						
17.	1MV19BT017	PRANESH KULASEKHAR	1	2	3	4	5						
18.	1MV19BT018	RICHARD STEPHEN S	1	2	3	4	5						
19.	1MV19BT019	ROHAN THOMAS CHERIAN	1	1	1	1	1						
20.	1MV19BT021	SAMARTH RAJE URS P A	0	1	2	3	4						
21.	1MV19BT022	SHREYA P	1	2	3	4	4						
22.	1MV19BT023	SHRUTHI P	1	2	3	4	5						
23.	1MV19BT024	SMRITI HUNSIGI	1	2	3	4	4						
24.	1MV19BT025	SRINJANA RAHA	1	2	2	3	3						
25.	1MV19BT026	SYEDA DANIYA IMAN	1	2	3	3	4						
26.	1MV19BT027	THEJASHREE M	1	2	2	3	4						
27.	1MV19BT028	TRISHA C	1	2	3	4	5						
28.	1MV19BT029	UMA MAHESHWARI A	1	2	3	4	4						
29.	1MV19BT030	UPPU AISHWARYA	1	2	3	3	4						
30.	1MV19BT031	VIDHYA SHREE S	1	2	3	4	4						
31.	1MV19BT032	VRITHI RAJU	1	2	3	4	5						
32.	1MV18BT015	JANVI RONI	0	0	0	0	0						
33.	1MV18BT042	URVIJA UMESH DUBEY	1	2	3	4	4						
34.	1MV15BT015	LASYA K S	1	2	3	4	4						

Rajendra Singh and Rashmi K V
Associate Professors & Workshop Co-ordinators

Dr. H.G. Nagendra
Professor & Head
Department of Biotechnology
Sir M. Visvesvaraya Institute of Technology
BANGALORE - 562157

Himalaya Wellness Company

INSTITUTION'S INNOVATION COUNCIL

SIR M VISVESVARAYA INSTITUTE OF TECHNOLOGY
DEPARTMENT OF BIOTECHNOLOGY
5 Day Workshop on "Recent Advances in the Development of Phytopharmaceuticals"
In association with Himalaya Wellness Company, Bengaluru

Report

Department of Biotechnology, Sir MVIT organized **5 Day Workshop on "Recent Advances in the Development of Phytopharmaceuticals" in association with Himalaya Wellness Company, Bengaluru** from 5th November 2022 to 3rd December 2022 (5 Saturdays) for 7th Semester BE-Biotechnology students.

There were 9 modules in the workshop like Drug Discovery & Introduction to ISM, Pharmacognosy; Biodiversity; GACP, Analytical development for RM identification, In vivo and In vitro techniques in Natural products, Application of Microbiology in Natural products and its safety studies, Advantages of Plant Biotechnology in Herbal industries, Introduction to Phytochemistry, Extraction & Isolation of Bioactive compounds, Principles of HPLC, LC-MS and its application. spectrophotometer techniques for the identification of Bioactive, Introduction of Process Eng. Advanced techniques in Pilot scale production.

Everyday morning 2 hours theory sessions were followed by 4 hours of practical sessions. A total of 17 scientists from various departments of Himalaya Wellness R&D have conducted the different modules of the workshop. After every module, students were given assessments and at the end of 5 days cumulative grade was calculated. All the experts from Himalaya Wellness R&D were presented with a memento as a token of appreciation. Feedback on all the sessions were collected from students.

Modules of this workshop has helped in bridging the gaps in the POs 1, 2, 3, 4, 5, 6 and 7.

Through this workshop students gained knowledge on various aspects of analytical techniques commonly used in phytopharmaceuticals identification and characterization. For example, TLC, GC, HPLC, LC-MS, NMR, GC-MS, in vivo and in vitro techniques in natural products screening, cell and molecular biology techniques in estimating the efficacy and toxicity of the natural drugs, animal models and pharmacological techniques in drug testing.

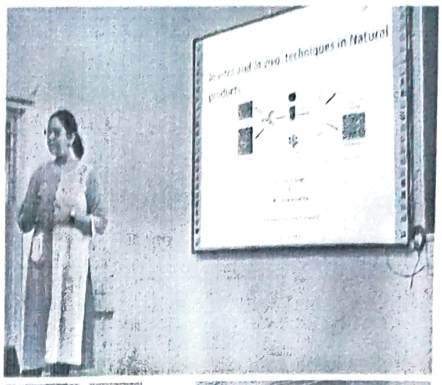
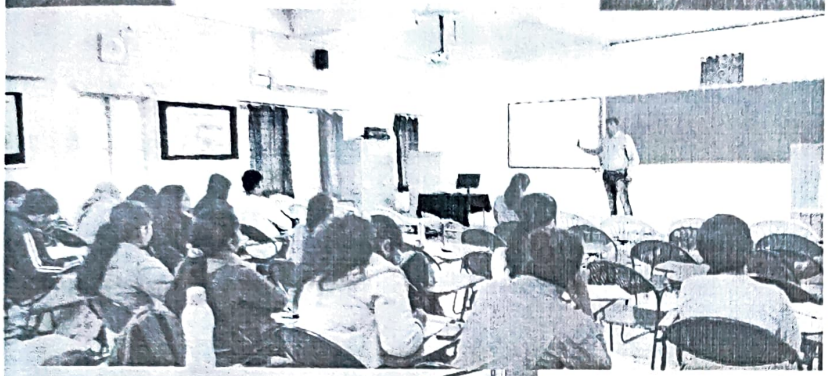
Overall, all the sessions gave industrial insights on phytopharmaceuticals development and were highly appreciated by all the students.

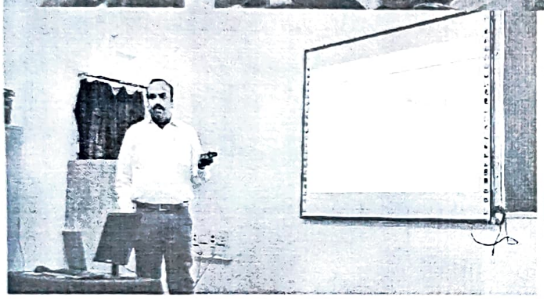
Dr Rashmi K V and Dr C Rajendra Singh
Associate Professors & Event Co-ordinators

Dr H G Nagendra
Professor and HoD

Dr H.G. Nagendra
Professor & Head
Department of Biotechnology
Sir M. Visvesvaraya Institute of Technolo
BANGALORE - 562157

Glimpses of the workshop






Dr Rashmi K V and Dr C Rajendra Singh
Associate Professor & Event Co-ordinator

Dr H G Nagendra
Professor and HoD

SRI KRISHNADEVARAYA EDUCATIONAL TRUST

No. 16, Ballari Road, Sadashivanagar, Bengaluru – 560 080

Ref.No.KET/SMVIT / /57 /2022 – 2023 /574 Date : 24/09/2022

N O T E:

Sub: Financial assistance for organizing 5th series Integrated Workshop on "Downstream Processing of Phytopharmaceuticals" – Reg.

Ref: Proposal dated 07/09/2022 from Dr. H.G. Nagendra, HOD, Dept. of Biotechnology, bearing No. 270, dated with Principal's endorsement No. 2375, dated 12/09/2022.

***

With reference to the above, this is to convey approval for organizing 5th series of Integrated Workshop on "Downstream Processing of Phytopharmaceuticals" from 10/10/2022 to 15/10/2022 by industry experts from Himalaya Drug Company, Bengaluru.

Rs.32,000/- (Rupees Thirty Two Thousand only) is granted for this workshop which may be drawn from Principal's SB account and reimbursement claimed within 15 days from the event with duly audited bills and vouchers.

(K.SYAMA RAJU)
SECRETARY

To
The Principal,
Sir MVIT,
Bengaluru.

Copy to:
1. Dr. H.G. Nagendra, HOD Biotechnology, Sir MVIT.
2. Accounts Officer, Sri KET, Bengaluru.

Dr CR
Dr KVR
By V K R
29/9/2022

SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY
Affiliated to VTU, Belagavi | Approved by AICTE, New Delhi / Govt. of Karnataka | Accredited by NAAC UGC

SINCE 1930

5th Integrative Workshop on "The Recent advances & Emerging Applications of Phytopharmaceuticals" from 5th Nov – 3rd Dec, 22

Pharmacognosy Practical – Assessment Form

Name of the Student: GOWDA SNEHA DEVE Date: 05/11/2022

Branch: BIOTECHNOLOGY

Register Number: 1MV19BT008 29½

Sample ID	Sample Identified As	Correct	Wrong	Score
1)	Identify sample - Hibiscus rosa-sinensis	✓		1
2)	Identify sample - Rhododendron arboreum	✓		1
3)	Identify sample - Terminalia chebula	✓		1
4)	Identify sample - Terminalia bellirica	✓		1
5)	Identify sample - Emblica officinalis	✓		1
6)	Identify sample - Cyperus rotundus	✓		1
7)	Identify sample - Scirpus maritimus	✓		1
8)	Identify sample - Piper longum	✓		1
9)	Identify sample - Piper retrofractum	✓		1
10)	Identify starch type/material - Tapioca	✓		1
11)	Identify starch type/material - Maize / corn	✓		1
12)	Identify starch type/material - Rice	✓		1
13)	Identify starch type/material - ~~Rice~~ Alpinia galanga, Rhizome	✓		1
14)	Identify starch type/material - Alpinia Calcarata	✓		1
15)	Identify the type of calcium crystal (Raphide) Aerva lanata	✓		½
16)	Identify the type of calcium crystal - Asparagus racemosus (Raphides)	✓		1
17)	Identify the type of calcium crystal - Andrographis paniculata (Raphides)	✓		1
18)	Identify the type of calcium crystal - Tinospora cordifolia	✓		1
19)	Identify stomata type - Spinach - (Diacytic type)	✓		1
20)	Identify stomata type - Hibiscus - (Anisocytic type)	✓		1
21)	Identify stomata type - Spring onion - (paracytic type)	✓		1
22)	Identify stomata type - ~~Meth~~ Aloevera - (Anisocytic)	✓		1
23)	Identify stomata type - Methi - (Anisocytic type)	✓		1
24)	Identify trichome type - Eclipta alba ~~(bar~~ (glandular)	✓		1
25)	Identify trichome type - Hibiscus rosa-sinensis (Stellate)	✓		1
26)	Identify trichome type - Indigofera tinctoria - leaf.	✓		1
27)	Identify trichome type - Aerva lanata - stem	✓		1
28)	Identify trichome type - Ocimum sanctum (Tulsi)	✓		1
29)	*Rubia cordifolia* – Identify Stem or Root - Rubia cordifolia (stem)	✓		1
30)	*Rubia cordifolia* – Identify Stem or Root - Rubia cordifolia (Root)	✓		1
Note: Tick the Appropriate, Score for Correct =1 & Wrong = 0 (Use Blue/Black Ink Pen)		**Total Scored**		29½

Raphide ← Raphide ← Simple crystal ←

Evaluated By (Name):

5th Integrative workshop on "The Recent Advances in Phytopharmaceuticals & Drug Discovery an Industrial Application" Saturdays from 5th November to 3rd December 2022.

Student assessment list:

Sl. No.	Name	College	Total (100)	Grade points (G)	Grade
1	AASHITHA C SHEKAR	MVIT	93.08	9	A
2	ACHYUTH S V	MVIT	95.25	10	A+
3	ADVAITH K G	MVIT	52.33	6	C
4	APARNA B S	MVIT	56.75	6	C
5	CHATURHTY	MVIT	57.50	6	C
6	DEEPIKA BHAT	MVIT	39.33	4	D
7	EMILEE GRACIA DOMNIC	MVIT	92.50	9	A
8	GOWDA SNEHA DEVE	MVIT	58.33	6	C
9	GURURAJ A	MVIT	17.25	2	E
10	K HRUTHIK KUMAR RAJU	MVIT	58.67	6	C
11	KAVYA BAI O P	MVIT	92.50	9	A
12	MADHUMITHA K	MVIT	59.67	6	C
13	MAHALAKSHMI N	MVIT	57.83	6	C
14	MAITHRI B M	MVIT	92.17	9	A
15	NAGASHREE S	MVIT	92.25	9	A
16	NIHARIKA K S	MVIT	26.67	4	D
17	PRANESH KULASEKHAR	MVIT	89.17	9	A
18	RICHARD STEPHEN S	MVIT	92.67	9	A
19	ROHAN THOMAS CHERIAN	MVIT	17.50	2	E
20	SAMARTH RAJE URS P A	MVIT	74.83	7	B
21	SHREYA P	MVIT	45.83	4	D
22	SHRUTHI P	MVIT	88.08	9	A
23	SMRITI HUNSIGI	MVIT	58.50	6	C
24	SRINJANA RAHA	MVIT	17.25	2	E
25	SYEDA DANIYA IMAN	MVIT	92.42	9	A
26	THEJASHREE M	MVIT	50.25	6	C

SRI KRISHNADEVARAYA EDUCATIONAL TRUST'S

SIR M. VISVESVARAYA INSTITUTE OF TECHNOLOGY

Krishnadevarayanagar, Hunasamaranahalli, Off. International Airport Road, Bengaluru - 562157
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Ph.: 080-2846 7248, 2847 7024, /25/26/ Fax : 080-2846 7081
E-mail : sirmvitbgl@gmail.com Web : www.sirmvit.edu

DEPARTMENT OF BIOTECHNOLOGY
(Recognised as R & D Centre by V.T.U.)

Ref.No. SMVIT/BT/ 531 /2022-23 Date : 19/1/2023

To

The National Coordinator

PMRF

Dear Sir/Madam

Further to the detailed discussions with Ms. Senji Laxme R R (who is a PhD Scholar and a PMRF Fellow at CES, IISc), as per PMRF requirements, we are pleased to utilize her expertise in a 25 hour teaching module to our Final Year BE Biotechnology Engineering students, between March and June 2023, at our campus.

This is for your kind information and needful.

Thanking You,

Yours Faithfully

H G Nagendra 19/1/2023

Dr H.G. Nagendra
Professor & Head
Department of Biotechnology
Sir M Visvesvaraya Institute of Technology
BANGALORE - 562157

SIR M VISVESVRAYA INSTITUTE OF TECHNOLOGY

List of students participating in the lecture series of Venomology-2023

Sl. No	**BE students**
1	K S LASYA
2	JHANVI RONI
3	URVIJA DUBEY
4	AASHITHA C SHEKAR
5	ACHYUTH S V
6	ADVAITH K G
7	APARNA B S
8	CHATURTHY
9	DEEPIKA
10	EMILEE GRACIA DOMNIC
11	DEVE SNEHA GOWDA
12	GURURAJ
13	HRUTHIK KUMAR RAJU
14	KAVYA BAI O P
15	MADHUMITHA K
16	MAHALAKSHMI
17	MAITHRI B M
18	NAGASHREE S
19	NIHARIKA K S
20	PRANESH KULASEKHAR
21	RICHARD STEPHEN
22	ROHAN THOMAS CHERIAN
23	SAMARTH RAJE URS
24	SHREYA RAO
25	SHRUTHI P
26	SMRITHI HUNSIGI
27	SRINJANA RAHA
28	SYEDA DANIYA IMAN
29	THEJASHREE M
30	TRISHA C
31	UPPU AISHWARYA
32	UMA MAHESHWARI

33	VIDYASHREE
34	VRITHI RAJU

Sl. No	**MTech students**
1	YAMUNA
2	JANE
3	YADUKIRAN
4	AKSHATHA
5	MANUDYUTH
6	AYAN

Venom pharmacology (18 classes)

S. No	Date	Topic	No. of hours
1	02-03-2023 09-03-2023	**Introduction to Venomics:** Basic definitions, importance, applications and prospects	2
2	16-03-2023	**Venom diversity:** Venom variation levels and consequences, application of proteomics, transcriptomics and other techniques in venom characterisation	2
3	23-03-2023	**Venom pharmacology:** Toxin types, targets and physiological effects, clinical toxicology	2
4	30-03-2023	**Venom evolution:** Brief overview of coevolution, arms race and other fascinating aspects of venom evolution	2
5	06-04-2023 13-04-2023	**Clinical aspects of venom research:** Snakebite problem, focus on snakebite therapies, antibody discovery	4
6	20-04-2023	**Venom as therapeutics:** Drugs from venom toxins and bioprospecting	2
7	27-04-2023	**Student seminars**	2
8	30-04-2023	**Student seminars**	2

nature COMMUNICATIONS

ARTICLE

Received 16 Aug 2015 | Accepted 17 Mar 2016 | Published 19 Apr 2016

DOI: 10.1038/ncomms11361 OPEN

NETosis and lack of DNase activity are key factors in *Echis carinatus* venom-induced tissue destruction

Gajanan D. Katkar[1], Mahalingam S. Sundaram[1], Somanathapura K. NaveenKumar[1], Basavarajaiah Swethakumar[1], Rachana D. Sharma[1], Manoj Paul[1], Gopalapura J. Vishalakshi[1], Sannaningaiah Devaraja[2], Kesturu S. Girish[1,2] & Kempaiah Kemparaju[1]

Indian *Echis carinatus* bite causes sustained tissue destruction at the bite site. Neutrophils, the major leukocytes in the early defence process, accumulate at the bite site. Here we show that *E. carinatus* venom induces neutrophil extracellular trap (NET) formation. The NETs block the blood vessels and entrap the venom toxins at the injection site, promoting tissue destruction. The stability of NETs is attributed to the lack of NETs-degrading DNase activity in *E. carinatus* venom. In a mouse tail model, mice co-injected with venom and DNase 1, and neutropenic mice injected with the venom, do not develop NETs, venom accumulation and tissue destruction at the injected site. Strikingly, venom-induced mice tail tissue destruction is also prevented by the subsequent injection of DNase 1. Thus, our study suggests that DNase 1 treatment may have a therapeutic potential for preventing the tissue destruction caused by snake venom.

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Snakebites affect millions of people worldwide and cause injury, disability and death. Annual epidemiology data have recorded ~5.5 million bites, including 0.4 million amputations and 0.125 million deaths[1–3]. However, the public health importance of snakebites has been neglected[3]. Thus, in 2009, the World Health Organization categorized snakebite as a 'Neglected tropical disease'[3]. Snakebite causes both fatal systemic and local toxicities. The local toxicity is characterized by the continued tissue destruction, which predominantly results from viper bites. Although antivenom therapy has saved many lives, it has failed to inhibit viper bite-induced tissue destruction[4]. In addition, studies have demonstrated that Metzincin family matrix-degrading snake venom metalloproteases (SVMPs)[5] and hyaluronidases (SVHYs) induce local tissue destruction[6–8]; unfortunately, their neutralization by natural and synthetic compounds has failed to reach the clinic[9–11]. This is not due to lack of neutralizing potency of the antivenoms or ineptness of the inhibitors, but rather to the rapid development of local pathology with an unknown cause, which prevents the therapeutic antibodies/inhibitors from accessing the damaged site[1].

Echis species (saw-scaled/carpet vipers) envenomation is well known for producing tissue destruction at the bite site and accounts for the largest number of cases of mortality and morbidity resulting from snakebite in northern Africa and Asia[10,12]. *Echis* species venom is rich in SVMPs, which are multidomain haemorrhagic proteases that contain additional cysteine-rich and C-type lectin-like domains[13,14]. These additional domains are largely responsible for the recruitment of inflammatory cells that trigger inflammation[14]. Neutrophils are the first-line defence cells in innate immunity, and they infiltrate and accumulate at the bite site[15]; however, their role in tissue destruction remains unknown[16]. These cells quickly respond to foreign agents through phagocytosis and respiratory burst, but when required, they readily die by discharging their decondensed chromatin covered with cytotoxic and antimicrobial agents, known as neutrophil extracellular traps or NETs, in a process-dubbed NETosis[17,18]. The defensive role of NETs/extracellular DNA in immobilizing and killing pathogens has been well documented[17] and is termed as an ancient defence weapon[19]. Paradoxically, NETs also elicit collateral damage because of their associated cytotoxic components[20–22]. Thus, NETs work like a double-edged sword[23]. This led us to focus on and explore the role played by neutrophils in the tissue destruction induced by *E. carinatus* venom. As neutrophils accumulate at the site of venom injection, we hypothesized that the venom triggers NETosis. NETs may play a critical role in the entrapment and accumulation of venom toxins at the bite/injection site, which could be a trigger that accelerates tissue destruction.

Here we demonstrate that *E. carinatus* venom causes formation of NETs, resulting in the accumulation of venom toxins at the injection site and leading to continued tissue degradation. We also show that NETs could be degraded by externally added DNase 1, which could be a possible treatment for this type of snakebite.

Results

***E. carinatus* venom stimulates neutrophils to promote NETosis.** We tested whether *E. carinatus* venom could induce NETosis in human neutrophils. The venom induced NET formation in both dose- and time-dependent manner, and the NETs were quantified using myeloperoxidase-DNA (MPO-DNA) capture ELISA (Fig. 1a, left and right) and Hoechst staining (Fig. 1b, left and right) assays. The venom-treated neutrophils showed a dose-dependent increase in the expression of the peptidylarginine deiminase 4 (PAD4) enzyme (Fig. 1c, left), and this paralleled with the formation of citrullinated histone H3 (H3Cit; Fig. 1c, right) in western blot studies. Furthermore, the immunocytochemistry study revealed that H3Cit and the extracellular DNA co-localize (Fig. 1d). The quantification of the H3Cit-positive neutrophils and their extruded DNA indicated that they were significantly increased compared with unstimulated neutrophils (Supplementary Fig. 1a,b). Phorbol 12-myristate 13-acetate (PMA)-treated neutrophils served as positive control. Scanning electron microscope analysis confirmed the NETosis, where thick bundles of chromatin fibres, NETs, emerging from and connecting different neutrophils were conspicuously visible compared with the intact, unstimulated neutrophils (Fig. 1e). We next examined the *E. carinatus* venom-induced dose-dependent reactive oxygen species (ROS) production in neutrophils (Supplementary Fig. 2). The venom-induced ROS production was decreased when neutrophils were pre-incubated with diphenyleneiodonium chloride (DPI) or dinitrophenol (DNP) or together (Fig. 2a). However, DNP decreased the ROS production more significantly than DPI, whereas in combination the effect was found to be additive (Fig. 2a). Similarly, the trend was paralleled with the quantity of NETs formation (Fig. 2b).

In the *in vivo* experiment, mice that were given injections of *E. carinatus* venom (lethal dose$_{50}$ (LD_{50}) is the amount of venom that causes 50% mortality) into the tail were observed for 15 days. The appearance of haemorrhage and tissue destruction at the site of injection was noticed ~1 h after venom injection. The tail exhibited severe haemorrhage and tissue destruction 8 h after venom injection compared with the control, which received phosphate-buffered saline (PBS; Supplementary Fig. 3a). The venom-injected tails were monitored and visually scored for injury for 15 days. The injured tails detached between days 10 and 15 (Supplementary Fig. 3b). Western blotting of the venom-injected tail tissue homogenates revealed increased levels of H3Cit and MPO that reached a maximum at 8 h and persisted even after the tail became necrotic (day 3 and onwards) and detached (day 10 and onwards; Fig. 3a). Tail tissue sections taken 8 h after venom injection showed the destruction and loss of integrity of the dermis and hypodermis, along with extruded DNA in the haematoxylin and eosin (H&E) staining compared with the PBS-injected control tail tissue sections (Supplementary Fig. 3c). Furthermore, immunofluorescence images of the tail tissue sections were positive for Ly6G, H3Cit and extracellular DNA, indicating that NETosis occurred in the venom-injected tail tissue (Fig. 3b and Supplementary Fig. 3d). A confocal microscopy study confirmed the existence of NETs in the venom-injected tail tissues, as evidenced by the co-localization of lactoferrin, H3Cit and extracellular DNA (Fig. 3c and Supplementary Fig. 4). However, H3Cit antibody also showed some nonspecific binding in mice tail tissues (Supplementary Fig. 4).

NETs block blood vessels and capture *E. carinatus* venom. H&E-stained tail tissue sections obtained 8 h after venom injection showed that the veins and capillaries (Fig. 4a) were blocked owing to the accumulation of NETs. Immunohistochemistry of the tail tissue sections further confirmed the accumulation and blockage of artery (Fig. 4b) and vein (Fig. 4c) by the NETs, as evidenced by the co-localization of Ly6G, H3Cit and extracellular DNA. Furthermore, *E. carinatus* venom accumulated in these tissue sections, even at 8 h after the venom injection, as demonstrated using a rabbit polyclonal antivenom raised against *E. carinatus* venom (Fig. 4d).

Immunocytochemistry revealed that the NETs captured the venom, as evidenced by the co-localization of the venom toxins and NETs (Fig. 5a). The DNA–venom capture ELISA technique was employed to demonstrate the interaction between the NETs and the *E. carinatus* venom. The formation of the NET–venom

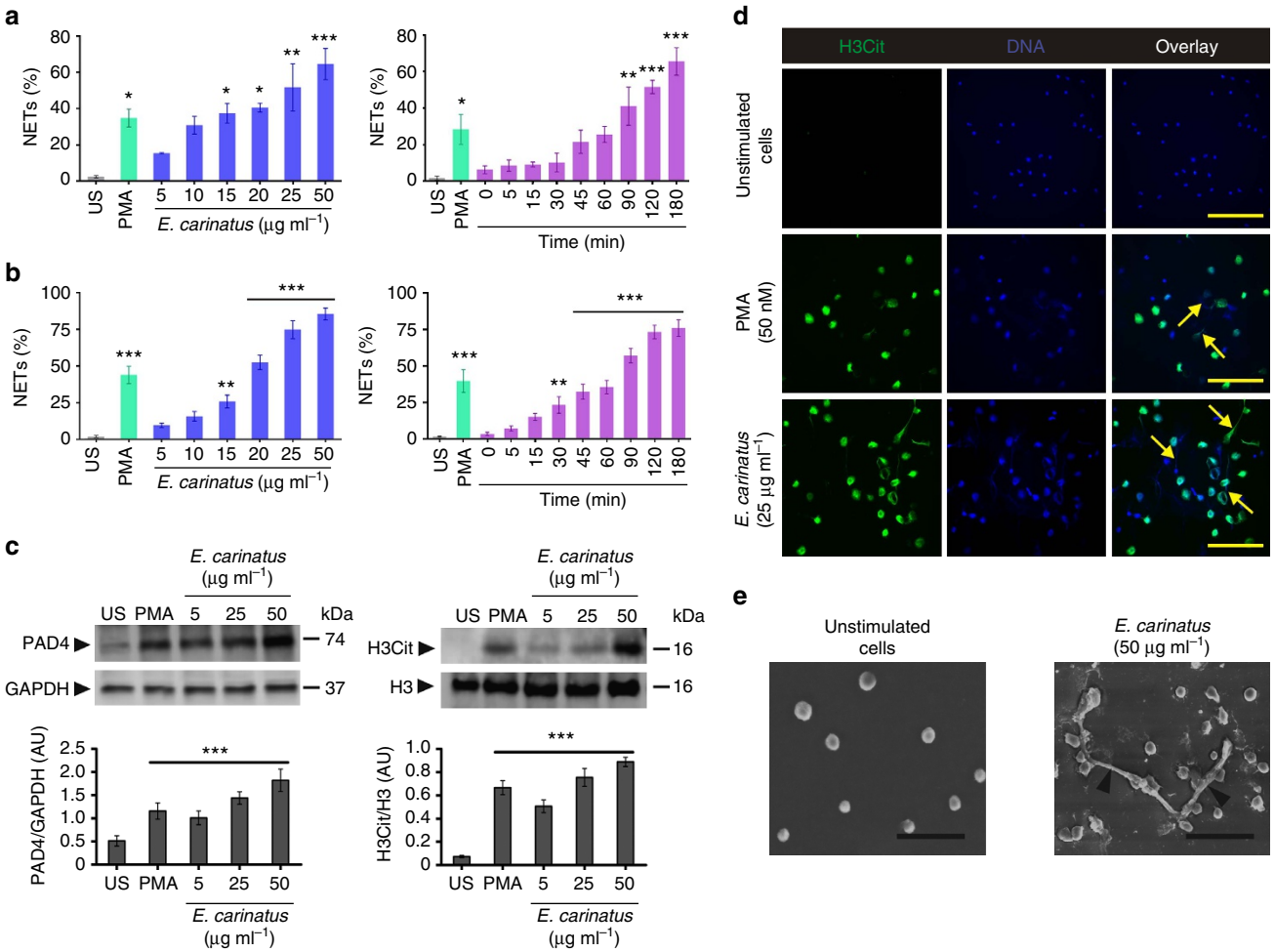

Figure 1 | *E. carinatus* venom stimulates *ex vivo* NETosis. *E. carinatus* venom-stimulated NET formation was quantified using (**a**) MPO-DNA capture ELISA and (**b**) Hoechst staining in dose- (left) and time-dependent (right) assays. The results are expressed as the percent increase relative to unstimulated cells (US); mean ± s.e.m. ($n=6$). $^{*}P<0.05$, $^{**}P<0.01$, $^{***}P<0.001$ versus US; one-way analysis of variance (ANOVA), followed by Dunnett's *post-hoc* test. PMA (50 nM) served as a positive control. (**c**) Western blot analysis of PAD4 expression (top, left) and the presence of H3Cit (top, right) in *E. carinatus* venom-treated neutrophils. PAD4 expression was normalized to GAPDH expression (bottom, left), and H3Cit levels were normalized to H3 levels (bottom, right). AU, arbitrary units; H3Cit, citrullinated histone 3; H3, histone 3; US, unstimulated cells. The data are presented as mean ± s.e.m. ($n=4$). $^{***}P<0.001$ versus US; one-way ANOVA, followed by Dunnett's *post-hoc* test. PMA (50 nM) served as a positive control. The PVDF membranes were cut based on molecular weight of respective protein using protein molecular weight marker and then probed with respective antibodies. (**d**) Representative immunofluorescence images of neutrophils/NETs. The neutrophils were exposed to *E. carinatus* venom (25 μg ml^{-1}) for 2.5 h at 37 °C. Yellow arrows indicate NETs. ($n=4$) Scale bars, 100 μm. PMA (50 nM) served as a positive control. (**e**) Scanning electron microscopy images showing unstimulated neutrophils (left) and *E. carinatus* venom-stimulated neutrophils, which displayed NETs with thick bundles of fibres (black arrowheads; right). ($n=4$) Scale bars, 30 μm.

complex increased with the increasing amounts of venom (Fig. 5b). The interaction between the DNA and the venom was further analysed using native polyacrylamide gel electrophoresis (PAGE), where the addition of venom to DNA retarded DNA mobility in a dose-dependent manner (Fig. 5c). The DNA–venom complex was dissociated using a DNA isolation protocol and analysed by native PAGE (Fig. 5c). Then, the DNA–venom complex was studied for its lethal potency using independent groups of mice that received the DNA–venom complex prepared using an LD_{50} or LD dose of the venom (venom/DNA: 1:1, w/w; Fig. 5d). Neither group exhibited mortality, while the groups that received LD_{50} and LD of venom alone exhibited 50% and 100% mortality, respectively. In contrast, *E. carinatus* venom failed to induce tail tissue damage in neutropenic mice (Fig. 6a). The tail injury score was decreased by approximately eightfold in neutropenic mice compared with the venom-injected control mice (Fig. 6b). Western blot analysis of tail tissue homogenates from the venom-injected neutropenic mice showed no sign of H3Cit signals (Fig. 6c). H&E staining of tail tissue sections from the venom-injected neutropenic mice showed an absence of neutrophils and, hence, extracellular DNA compared with the venom-injected normal mice (Fig. 6d). Immunohistochemistry further confirmed the lack of neutrophils and NETs, as the sections were negative for Ly6G and H3Cit (Fig. 6e). Whereas the group of neutropenic mice that received the LD_{50} dose of venom exhibited 100% mortality (Supplementary Fig. 5). As DNA is the backbone of NETs, the *E. carinatus* venom-induced stable NETosis was our impetus to test the DNase activity of the venom. We found that the venom failed to degrade herring sperm DNA, even after exhaustive incubation for 24 h (Supplementary Fig. 6).

DNase 1 prevents *E. carinatus* venom-induced NETosis. In *in vivo* studies, co-injection of DNase 1 prevented the *E. carinatus*

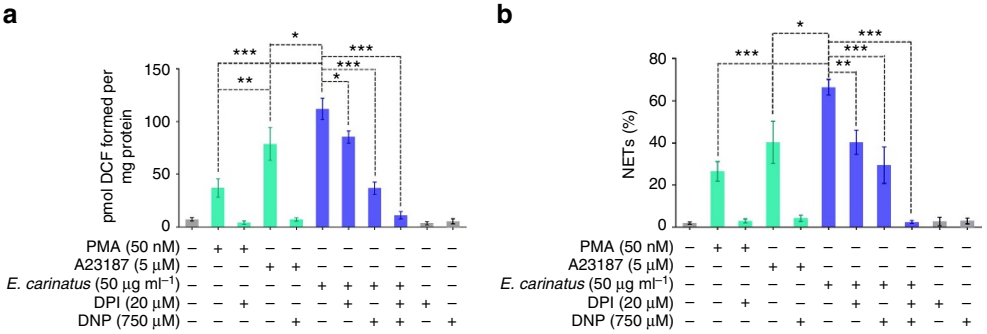

Figure 2 | *E. carinatus* venom-mediated NETosis is both NOX-dependent and NOX-independent. (**a**) Represents the level of ROS in neutrophils incubated with PMA, A23187 or *E. carinatus* venom in the presence or absence of DPI (20 μM) or DNP (750 μM) or both DPI (20 μM), DNP (750 μM). The data are presented as mean ± s.e.m. ($n=4$). *$P<0.05$, **$P<0.01$, ***$P<0.001$; one-way analysis of variance followed by Bonferroni *post-hoc* test. (**b**) Represents NET release measured using MPO-DNA capture ELISA in neutrophils incubated with PMA, A23187 or *E. carinatus* venom in the presence or absence of DPI (20 μM) or DNP (750 μM) or both DPI (20 μM) DNP (750 μM). The data are presented as mean ± s.e.m. ($n=4$). *$P<0.05$, **$P<0.01$, ***$P<0.001$; one-way ANOVA, followed by Bonferroni *post-hoc* test.

venom-induced tail tissue damage in a dose-dependent manner (Supplementary Fig. 7a). However, the tissue-damaging property of the venom was not altered by co-injection with actin pre-treated DNase 1 (Supplementary Fig. 7a). The western blot study revealed that H3Cit (Fig. 7a) and venom (Fig. 7b) were not present in tail tissue homogenates from mice injected with both venom and DNase 1, whereas the homogenates from mice injected with venom alone contained both H3Cit (Fig. 7a) and venom (Fig. 7b). Venom accumulation was further demonstrated using immunofluorescence of the tail tissue sections (Fig. 7c). Although the mice injected with both venom and DNase 1 did not show any signs of local tissue damage, interestingly, the mice died much faster than if they were injected with venom alone (Fig. 7d and Supplementary Fig. 7b).

In the challenge study, the tail injury score (Fig. 8a) and photographs of representative mice (Fig. 8b) revealed that when DNase 1 was injected at different time intervals after the venom (LD_{50}) injection (30–180 min), the mice tails showed initial signs of haemorrhage on days 1 and 2, and recovered on days 5–7, exhibiting normal tail morphology without an increase in lethality. Conversely, in the absence of the DNase 1 treatment, intense haemorrhage and wound formation led to the detachment of the affected tail portion between days 10 and 15 (Fig. 8a,b). Moreover, when serum was incubated with *E. carinatus* venom, the serum DNase activity was not inhibited, as evidenced by the nearly equal zone of clearance in serum alone and in serum incubated with the increasing doses of *E. carinatus* venom (Supplementary Fig. 8).

To determine whether venom from another snake species, *N. naja,* induces NETosis, we used MPO-DNA capture ELISA assay. We did observe NETosis at lower doses of the venom, but it was not observed at higher doses or with prolonged incubation periods (Fig. 9a). Western blot study using a rabbit polyclonal antivenom for *N. naja* venom showed that the venom did not accumulate at the injection site (Fig. 9b). This was further confirmed by the immunohistochemistry study, in which tail tissue sections from venom-injected mice did not show an accumulation of venom at the injection site. However, in mice injected with actin pre-treated *N. naja* venom, the tail tissue sections exhibited an accumulation of the venom (Fig. 9b,c). Furthermore, the actin pre-treated *N. naja* venom failed to induce lethal toxicity, as all of the experimental mice survived (Fig. 9d). Finally, when tested for DNase activity, the *N. naja* venom dose-dependently hydrolysed calf thymus DNA, whereas actin pre-treated venom failed to hydrolyse DNA (Supplementary Fig. 9).

Discussion

E. carinatus induces intense tissue destruction at the bite site, with symptoms such as oedema, haemorrhage and tissue destruction[10,24]. Although neutrophil infiltration has been demonstrated at the site of a viper bite/venom injection[15], it has not been thoroughly investigated[8]. This study deciphers the cellular mechanism of tissue destruction by the *E. carinatus* venom and suggested a possible therapeutic approach for snakebite management. We show that the venom-stimulated neutrophils undergo NETosis and that the resulting NETs block the blood vessels to prevent the venom from entering the circulation, resulting in venom accumulation and tissue destruction at the injection site. This effect was reversed by the administration of DNase 1.

Neutrophils are the first-line defence cells and effectively capture pathogens by NETosis[17]. NETosis occurs via both the NOX-dependent and NOX-independent pathways[25]. Our study suggests that *E. carinatus* venom stimulated the neutrophils to undergo NETosis both *in vitro* and *in vivo*. *E. carinatus* venom-stimulated ROS production and NETosis were significantly decreased in the presence of DPI (NOX inhibitor) and DNP (uncoupler of oxidative phosphorylation and electron transport) indicating the induction of both the NOX-dependent and NOX-independent pathways. Induction of both pathways is likely due to the presence of various toxins in *E. carinatus* venom that affects several cellular pathways. Some strains of *Staphylococcus aureus* and lipid mediator hepoxilin A3 induce NETosis through both the NOX-dependent and NOX-independent patways[26–28]. Several recent studies have demonstrated that *E. carinatus* venom induced oxidative stress in both *ex vivo* and *in vivo* experiments[10,29]. NETosis is marked by increased PAD4 expression, which triggers chromatin de-condensation through deimination of arginine in H3 to form citrulline (H3Cit)[30,31]. Thus, the results of the western blot shows increased expression of PAD4 and the appearance of H3Cit in human neutrophils support the hypothesis that the *E. carinatus* venom induces NETosis. The rapid increase in PAD4 levels in neutrophils could be due to *E. carinatus* venom-stimulated NOX-independent pathway[25,32]. We show that *E. carinatus* venom does not contain bacteria, which rules out the role of bacterial contamination in driving neutrophils into NETosis (Supplementary Fig. 10). The detection of NETosis markers, such as Ly6G, lactoferrin and H3Cit, in venom-injected tail tissue sections confirmed NETosis *in vivo*.

Furthermore, the sections exhibited blood vessel obstruction due to the accumulation of blood clots, including NETs.

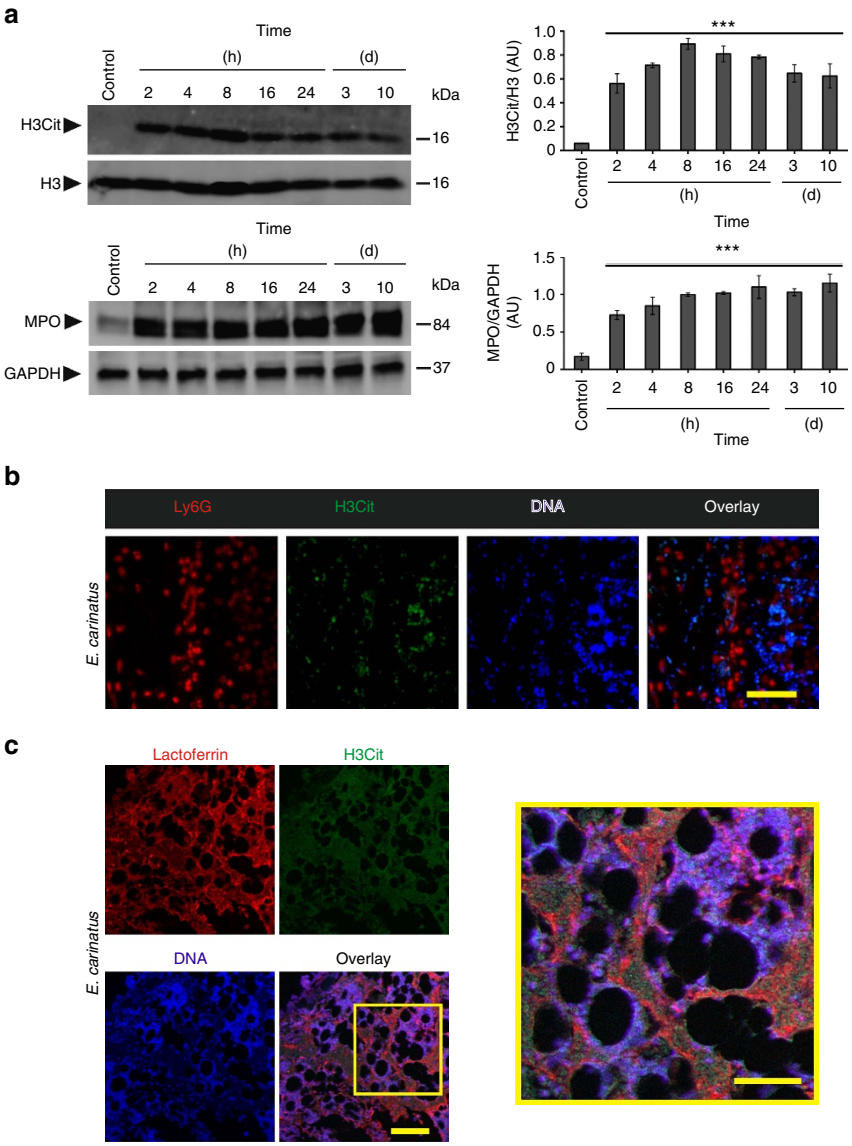

Figure 3 | *E. carinatus* venom stimulates *in vivo* NETosis. (**a**) Representative western blot of the time course of H3Cit and MPO appearance in *E. carinatus* venom (LD_{50})-injected mouse tail tissue (left) and quantification of the H3Cit levels compared with the H3 levels (top, right) and MPO level compared to GAPDH (bottom, right). AU, arbitrary units; H3Cit, citrullinated histone 3; H3, histone 3; MPO, myeloperoxidase. The data are presented as mean ± s.e.m; Student's *t*-test, $***P<0.001$ versus control; $n=4$ for the control, 2, 4, 8 and 16 h samples; $n=5$ for 24 h, day 3 and day 10 samples. The PVDF membranes were cut based on molecular weight of respective protein using protein molecular weight marker and then probed with respective antibodies. (**b**) Representative immunofluorescence images of mouse tail tissue 8 h after *E. carinatus* venom (LD_{50}) injection, focused beneath the epithelial layer. Scale bar, 100 μm ($n=4$). (**c**) Representative confocal image of *E. carinatus* venom (LD_{50})-injected mouse tail tissues focused beneath the epithelial layer. The area enclosed by the yellow box is magnified and shown on the right. Scale bars, 100 μm (left), 50 μm (right); $n=3$.

E. carinatus venom is a pro-coagulant[33] and promotes fibrin clot formation[10,34]. Moreover, NETs also promote fibrin clot formation[35,36]. NET-associated clots are more resistant to mechanical forces and enzymatic digestion[35,37]; thus, the blood vessels remained blocked, even after 8 h of venom injection, despite the fibri(noge)nolytic activity of *E. carinatus* venom[10,24]. However, further detailed investigation is warranted to understand the interactions between NETs and fibrin clots. The blockage of blood vessels prevents the easy entry of the venom into the circulation and causes its accumulation at the injection site. The accumulated venom is a cocktail of several enzymatic and non-enzymatic toxins, predominantly the extracellular matrix (ECM)-degrading haemorrhagic SVMPs and SVHYs. SVMPs degrade structural proteins, including collagens, laminin and fibronectin molecules[5,38,39], whereas SVHYs degrade the structural glycosaminoglycan hyaluronic acid[6,8,40]. Thus, the loss of ECM integrity destabilizes the tissues and the basement membrane of blood vessels. In addition, NET-associated histones can damage endothelial cells[20,21,23]. Furthermore, NET-associated neutrophil elastase is a highly stable broad-spectrum protease that can cause further ECM damage[20,22,23,30]. In a recent study, NETosis was shown to cause delayed wound healing in diabetic patients[32]. Therefore, *E. carinatus* venom-induced NETosis not only restricts the venom to the bite site and promotes tissue destruction but also blocks the blood flow to the tissues and cells that are distal to the bite site. Increased NET formation or impaired NET clearance is detrimental, as demonstrated in chronic inflammatory disorders, including vasculitis, psoriasis, preeclampsia, atherosclerosis, systemic lupus erythematosus and gout[23,41–43].

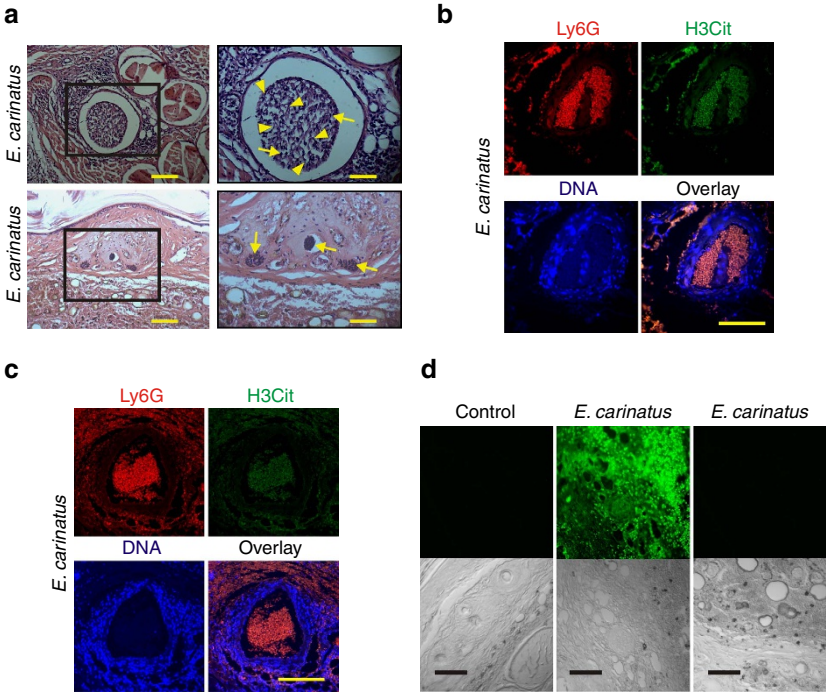

Figure 4 | NETs block blood vessels, leading to accumulation of *E. carinatus* venom. (**a**) Images of H&E-stained mouse tail tissue 8 h after *E. carinatus* venom (LD_{50}) injection show clot formation in the mouse tail vein (top, left) and blocked blood capillaries (bottom, left). The respective enlarged images are shown on the right. Scale bars, 50 μm (left), 100 μm (right). Yellow arrowheads indicate NETs and yellow arrows indicate neutrophils. Immunofluorescence image of the mouse ($n=4$). (**b**) tail artery and (**c**) vein 8 h after *E. carinatus* venom (LD_{50}) injection. Scale bars, 100 μm ($n=4$). (**d**) Immunofluorescence images show the accumulation of venom in *E. carinatus* venom (LD_{50})-injected mouse tail tissue section (top row, middle), section with a secondary antibody control (top row, right) and section of PBS-injected tail tissue, which served as a control (top, left). The corresponding differential interference contrast (DIC) images of the respective tissues are also shown (bottom row). Scale bars, 100 μm ($n=4$).

Chromatin is an ancient defence weapon of the innate immune system[19]; it is known to form a complex net that enmeshes and kills bacteria, fungi, viruses and other parasites[17]. We demonstrate that the venom-induced NETs capture venom toxins. The negative charge in the NETs[44] could sequester the positively charged venom toxins such as basic PLA_2s, 3FTx and SVMPs[45–48]. The successful recovery of DNA from the DNA–venom complex suggests that the interaction between the DNA and venom toxins was non-covalent. Surprisingly, the lethality studies showed that the lethal potency of the venom was reduced when it formed complex with the DNA. This was attributed to the sequestration and inhibition of the positively charged venom toxins by the NETs/DNA. We reasoned that the depletion of the neutrophils and, hence, the NETs would result in decreased venom-induced tissue destruction and increased lethal potency. Indeed, in neutropenic mice, the venom did not induce haemorrhage and tissue destruction at the injection site, but caused 100% mortality even at the LD_{50} dose of venom. Of note, and as discussed above, although *E. carinatus* venom-induced NETosis is detrimental, it is an adaptive immune response that restricts the entry of *E. carinatus* venom into the circulation and protect from its lethal systemic toxicity.

The stability of the NETs is due to the lack of DNase activity in the *E. carinatus* venom and the inability of serum DNase to clear the large accumulated NETs at the injection site. We ruled out the possible inhibition of serum DNase by the *E. carinatus* venom. Thus, we tested whether DNase 1 could clear the NETs. As anticipated, co-injection of venom and DNase 1 prevented haemorrhage and local tissue damage, but also increased the lethal potency of the venom by improving penetration of the venom into the circulation. This effect was neutralized by antivenom administration. Surprisingly, in the challenge study, all the mice survived when DNase 1 was administered 30–180 min after venom injection. This mitigation of the lethal potency of the venom could be due to the formation of the NETs/DNA–venom complex. We postulate that venom initially stimulates NETosis of the accumulated neutrophils. Eventually, the negatively charged NETs/DNA fibres form complexes with the positively charged venom toxins such as basic PLA_2s, 3FTxs and SVMPs and entrap them. Further, it is likely that the negatively charged NETs/DNA would chelate metal ions[49] such as Zn^{2+} and Ca^{2+} thereby inhibiting SVMPs and venom PLA_2s, respectively[46,48,50]. Although the NETs/DNA fibres are degraded by the administered DNase 1, it is possible that the small DNA fragments remained in complex with the venom toxins keep them inactive. However, further studies are required to delineate the precise molecular mechanism(s) at play. NET clearance is essential for the wound-healing process[32]. Our present findings are complemented by recent studies showing that DNase 1 treatment accelerated wound resolution in diabetic and wild-type mice[32] and increased NET clearance by macrophages *in vitro*[51]. In contrast to the *E. carinatus* venom, which is known for its ability to induce haemorrhage and local tissue destruction, the *N. naja* venom lacks these effects[52]. This is most likely due to the fact that the *N. naja* venom contains high levels of DNase activity and this degrades NETs and prevents the venom from accumulating at the injection site, as the inhibition of DNase activity not only resulted in venom accumulation at the injection site but also abolished the venom's lethality. In addition, despite the venom accumulation at the injection site, there was no local tissue destruction. This is likely due to the fact that *N. naja* venom lacks ECM-degrading haemorrhagic SVMPs[52].

In summary, the results indicate that *E. carinatus* venom induces the formation of stable NETs owing to its lack of DNase

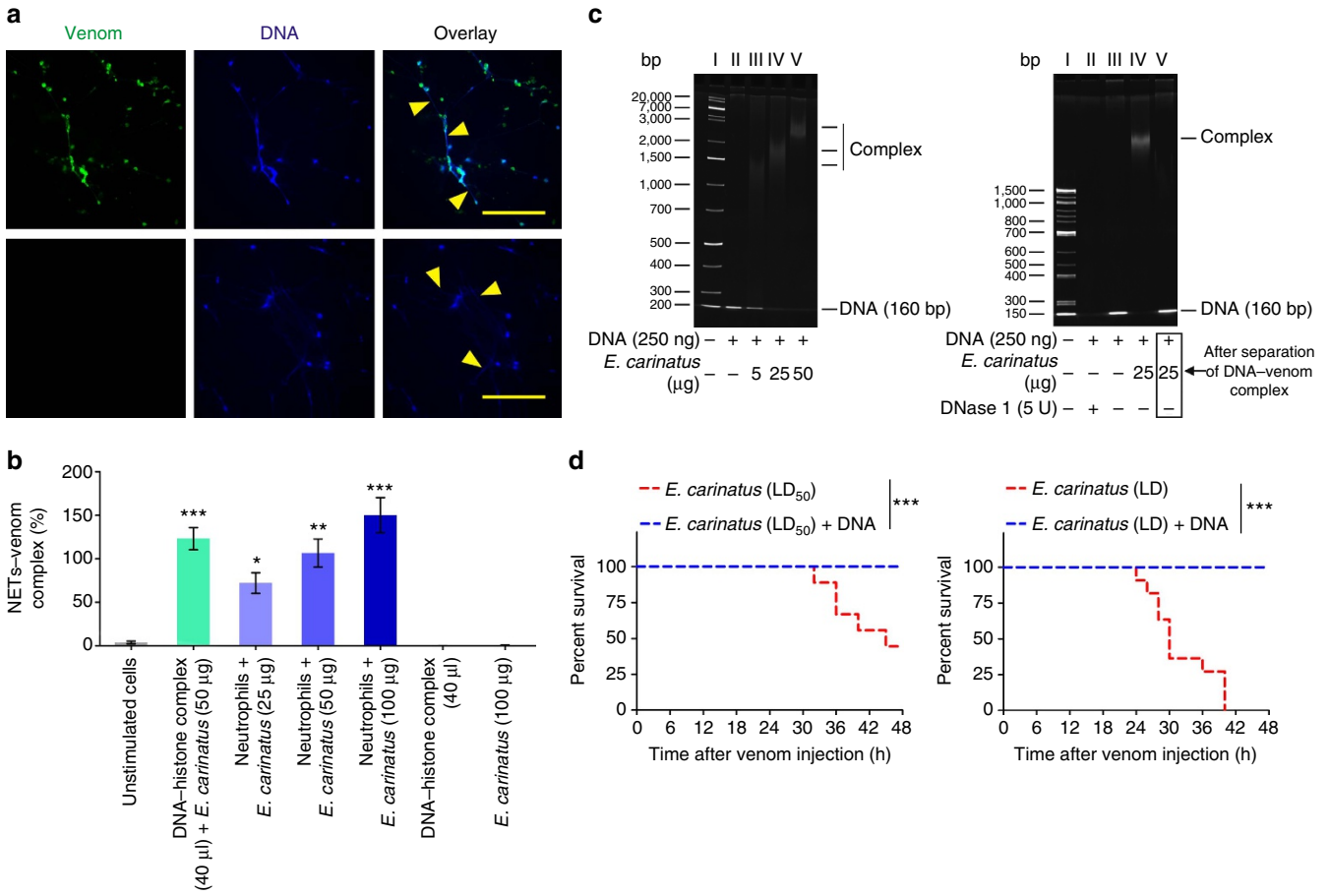

Figure 5 | NETs capture *E. carinatus* venom toxins. (**a**) Representative immunofluorescence image of neutrophils exposed to *E. carinatus* venom (50 μg ml^{-1}) for 2.5 h; the venom was detected using rabbit polyclonal antibody against *E. carinatus* venom followed by an AlexaFluor 488-conjugated goat anti-rabbit antibody along with DNA stained by Hoechst stain (top row). The AlexaFluor 488-conjugated goat anti-rabbit secondary antibody control (bottom row). Yellow arrow heads indicate NETs. Scale bars, 100 μm ($n=4$). (**b**) The NET–venom complex was quantified using the DNA–venom capture ELISA assay. The results are expressed as a percent increase with respect to the unstimulated cells. The data are presented as mean ± s.e.m. ($n=4$). $^{*}P<0.05$, $^{**}P<0.01$, $^{***}P<0.001$ versus the unstimulated cells; one-way analysis of variance, followed by Dunnett's *post-hoc* test. (**c**) Native PAGE (7.5%) showing the interaction between DNA and *E. carinatus* venom (left), as demonstrated by the dose-dependent retardation of the bands. Marker (lane I), 250 ng DNA (lane II), 250 ng DNA + 5 μg *E. carinatus* venom (lane III), 250 ng DNA + 25 μg *E. carinatus* venom (lane IV) and 250 ng DNA + 50 μg *E. carinatus* venom (lane V). Recovery of DNA from the DNA–venom complex (right). Marker (lane I), 250 ng DNA + 5 U DNase 1 (lane II), 250 ng DNA (lane III), 250 ng DNA + 25 μg *E. carinatus* venom (lane IV) and recovered DNA from DNA + *E. carinatus* venom complex (lane V); $n=3$. (**d**) Kaplan–Meier survival curves show that the lethal potency of the *E. carinatus* venom is inhibited when it is incubated with DNA: *E. carinatus* venom, LD_{50} (red line, left) and LD (red line, right), and *E. carinatus* venom incubated with DNA for 10 min at 37 °C (blue line, both left and right); $n=10$. $^{***}P<0.001$. Log-rank test.

activity. These NETs trap the venom toxins and thereby promote tissue destruction at the injection/bite site. The dense NETs and the blood clots formed in the damaged tissues and capillaries hinder the free flow of blood and prevent the antivenom from reaching the damaged site. This study presents (i) the role of NETosis in *E. carinatus* venom-induced tissue destruction, (ii) a convenient mouse tail model to study viper venom-induced tissue destruction, (iii) the role of DNase activity in venom toxicity and (iv) provides a lead for designing new strategies for the possible use of DNase 1 in the management of *E. carinatus* venom-induced tissue destruction. This study could also drive future studies to understand and uncover the molecular mechanisms associated with other venomous bites that cause similar pathological conditions. However, further detailed and systematic investigations in human subjects are needed to validate these findings before they are implemented in the clinic.

Methods

Animals. Adult Swiss albino mice (8- to 10-week-old male or female) weighing 20–25 g were obtained from the Central Animal House Facility, Department of Zoology, University of Mysore, Mysuru, India. New Zealand albino female rabbits (6-month-old) weighing 1.5–2 kg were obtained from the Department of Livestock Production and Management, Veterinary College, Bengaluru, India. The animal experiments were approved by the Institutional Animal Ethical Committee, University of Mysore, Mysuru (Approval numbers: UOM/IAEC/20/2012 and UOM/IAEC/09/2013). During all experiments, animal care and handling were in accordance with the guidelines of the Committee for the Purpose of Control and Supervision of Experiments on Animals (CPCSEA).

Humans. Human blood was drawn from the antecubital veins of healthy adult volunteers who provided written informed consent, as per the guidelines of the Institutional Human Ethical Committee, University of Mysore, Mysuru. All the experiments were approved by the Institutional Human Ethical Committee, University of Mysore, Mysuru (Approval number: IHEC-UOM No. 47Res/2014–15) and conducted in accordance with the ethical guidelines.

Reagents. The *E. carinatus* and *N. naja* venoms were purchased from Irula Co-operative Society Ltd., Chennai, India. The calf thymus DNA, DMEM, Histopaque-1077, Ponceau stain, actin from bovine muscle, protease inhibitor cocktail, protein A agarose, dextran (molecular weight ~100 kDa), PMA, bovine serum albumin, human serum albumin (HSA), calcium ionophore (A23187), 2′,7′-dichlorofluorescein diacetate (DCFDA), DPI, DNP, Cell Death Detection ELISA^{PLUS} (Version 14, Roche Diagnostics), and Freund's complete and

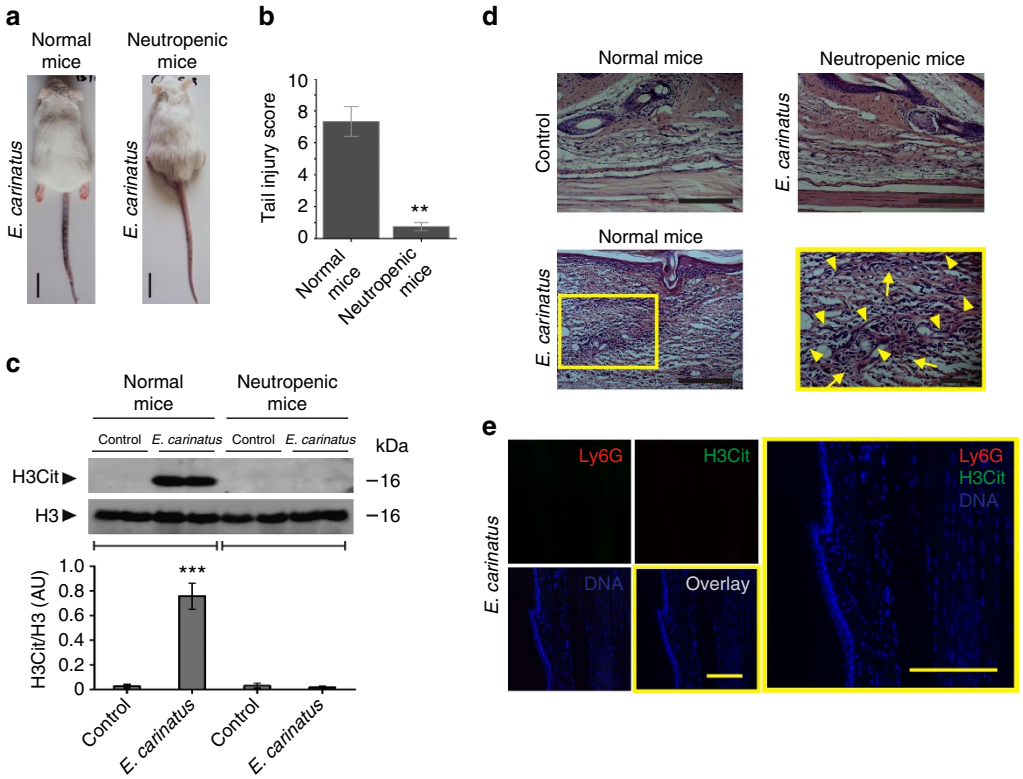

Figure 6 | *E. carinatus* venom does not induce local tissue damage or NETosis in neutropenic mice. (**a**) Representative photographs of mice 8 h after *E. carinatus* venom (LD_{50}) injection in the tail show intense venom-induced wound in the tail of a normal mouse (left), but no haemorrhage in a neutropenic mouse (right). Scale bars, 2 cm. ($n=10$). (**b**) The corresponding tail injury score 8 h after the *E. carinatus* venom (LD_{50}) injection is shown in a bar graph. The data are presented as mean ± s.e.m. $n=6$ venom-injected normal mice; $n=10$ venom-injected neutropenic mice. $^{**}P<0.01$; Student's *t*-test. (**c**) Western blot analysis of the appearance of H3Cit (top) in tail tissue homogenates taken from normal and neutropenic mice 8 h after *E. carinatus* venom (LD_{50}) injection. The quantification of H3Cit levels compared with H3 levels is shown (bottom). AU, arbitrary units; H3Cit, citrullinated histone 3; H3, histone 3. The data are presented as mean ± s.e.m. ($n=4$). $^{***}P<0.001$ versus the normal control mice; one-way analysis of variance, followed by Dunnett's *post-hoc* test. The PVDF membranes were cut based on molecular weight of respective protein using protein molecular weight marker and then probed with respective antibodies. (**d**) H&E-stained tail tissue sections from neutropenic (top right) and normal mice (bottom left) injected with *E. carinatus* venom (LD_{50}); the yellow portion is enlarged and shown on the right. Tissue from PBS-injected normal mice is also shown (top, left). Scale bars, 100 μm. ($n=4$). (**e**) Representative immunofluorescence images of neutropenic mouse tail tissue 8 h after *E. carinatus* venom (LD_{50}) injection, focused beneath the epithelial layer. Scale bars, 100 μm ($n=4$).

incomplete adjuvants were procured from Sigma Chemicals. DNase 1 was purchased from Boehringer Ingelheim. The anti-histone H3 antibody (Cat. no. SC-10809) was obtained from Santa Cruz Biotechnology, Inc. Hoechst 33342 (Cat. no. H3570) was obtained from Life Technologies. AlexaFluor 488-conjugated AffiniPure Goat Anti-Rabbit IgG (H + L) (Cat. no. 111-545-003), AlexaFluor 647-conjugated AffiniPure Goat Anti-mouse IgG (H + L) (Cat. no. 115-605-003) were purchased from Jackson Immuno Research Laboratories, Inc. The AlexaFluor 647-conjugated anti-mouse Ly 6G antibody (clone 1A8; Cat. no. 127609) was obtained from BioLegend. The rabbit polyclonal anti-histone H3 (citrulline R2 + R8 + R17; H3Cit; Cat. no. ab5103), mouse monoclonal anti-myeloperoxidase (anti-MPO; 2C7; Cat. no. ab25989), anti-lactoferrin antibody (2B8; Cat. no. ab10110) and anti-PAD4 (4H5; Cat. no. ab128086) antibodies were obtained from Abcam. The DreamTaq Green DNA Polymerase kit (Cat. no. EP0711) was obtained from Thermo Scientific. Endoxan-*N*-(cyclophosphamide injection) was obtained from Baxter Oncology Products. The mouse anti-GAPDH mAb (6C5; Cat. no. CB1001) was purchased from Calbiochem. The microwell plates were obtained from Thermo Fisher Scientific.

Human neutrophil isolation. The human neutrophils were isolated from the blood of healthy volunteers[44]. The blood was collected and mixed with acid citrate dextrose (citric acid/sodium citrate/dextrose, 3:6:4; w/w/w) in 5:1 volumetric ratio (blood/anticoagulant), followed by dextran sedimentation and hypotonic lysis to remove red blood cells. Then, the cell pellet was suspended in 2 ml of PBS and subjected to density gradient centrifugation using Histopaque-1077 for 30 min, 210*g* at 4 °C, after which the neutrophils settled at the bottom as a cell pellet. This pellet was washed twice with PBS for 6 min, centrifuged at 210*g*, and re-suspended in HBSS buffer without cations containing 2% HSA or DMEM. The cells were counted using a Neubauer chamber and the required cell density was adjusted using HBSS/DMEM. Wright and Giemsa staining was used to determine the purity of the cells, which was >95%.

Quantification of NETosis by Hoechst stain and MPO-DNA ELISA. NETosis was quantified by Hoechst stain[32]. The neutrophils (2×10^5 cells per ml) were seeded on 13 mm round coverslips placed in 24-well culture plates in 500 μl of DMEM with 2% HSA and allowed to adhere to the coverslips for 30 min at 37 °C and 5% CO_2. Then, the cells were independently stimulated with *E. carinatus* venom (5–50 μg ml^{-1}) for 180 min to assess the dose-dependent response. To assess the time-dependent response, the *E. carinatus* venom (25 μg ml^{-1}) was incubated for different time intervals from 0 to 180 min. PMA (50 nM) served as a positive control. The cells were then fixed with 4% paraformaldehyde, followed by Hoechst 33342 staining (1:10,000). For NET quantification, images were acquired on a BA410 fluorescence microscope (Motic) attached to a DS-Qi2 monochrome CMOS sensor camera (Nikon) using a CCIS EC-H Plan achromatic ×40/0.65 objective lens and NIS-Elements D software (Version 4.3.00). The NET percentage was determined in 12 non-overlapping fields per coverslip. The images were analysed using ImageJ software. The average NET percentage was calculated from triplicate experiments. The experimenter was blinded to the treatment conditions during the analysis.

To quantify the NETs in the cell supernatant, we used a capture ELISA (Cell Death ELISA^{PLUS}, Roche) method based on capture of the MPO-associated DNA[53]. NETosis was induced using either *E. carinatus* or *N. naja* venom (5–50 μg ml^{-1}), as described above. PMA (50 nM) served as a positive control. Then, the reaction mixture was centrifuged at 20*g* for 5 min at room temperature and the supernatant was separated. The anti-MPO mAb (1:200, 50 μl) was coated onto 96-well plates overnight at 4 °C. After three washes (300 μl each), 20 μl of the reaction supernatant and 80 μl of incubation buffer containing peroxidase-labelled

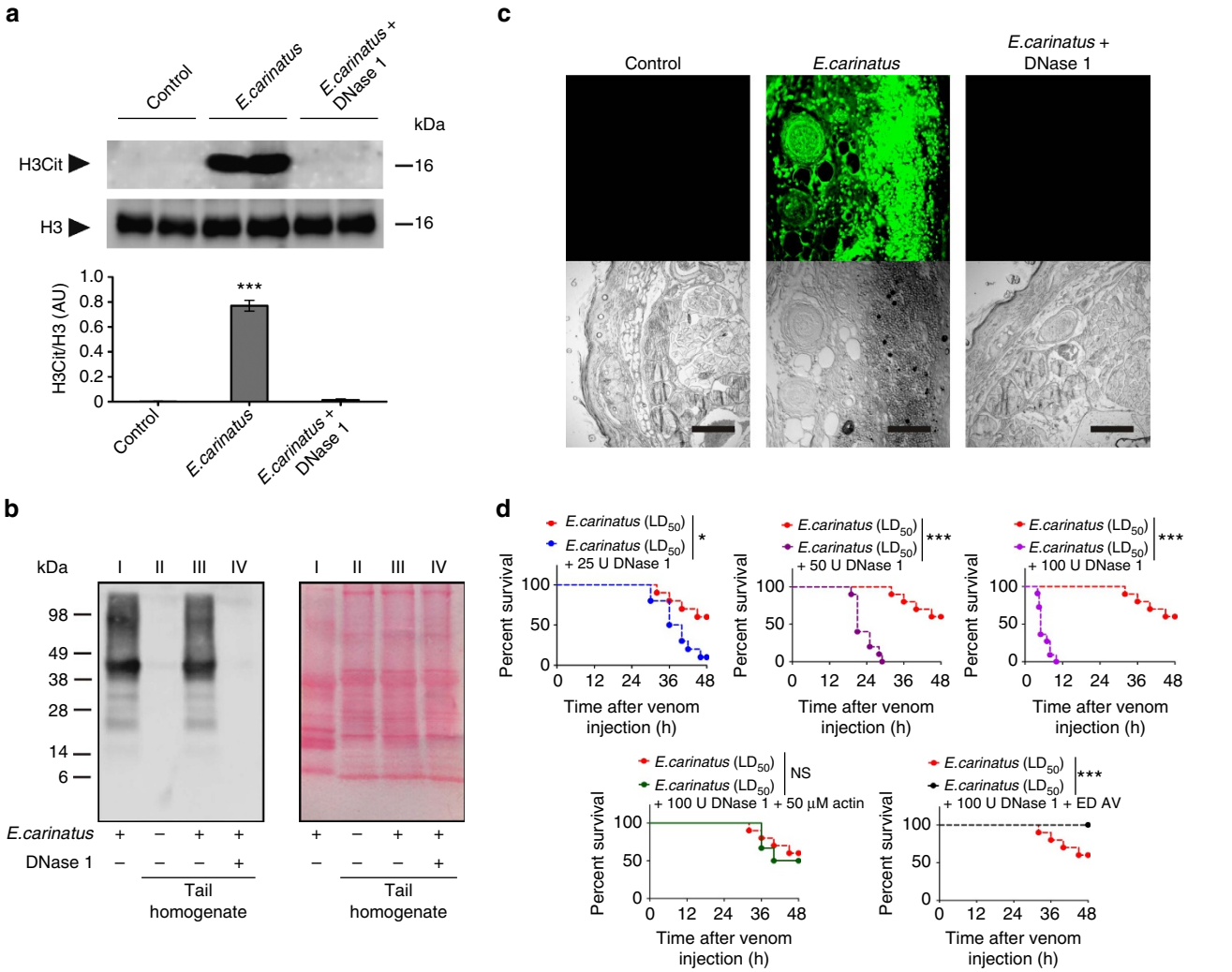

Figure 7 | Co-injection with DNase 1 prevents *E. carinatus* venom-induced tissue destruction. (**a**) Western blot analysis of the appearance of H3Cit (top) in tail tissue homogenates taken 8 h after *E. carinatus* venom (LD_{50}) injection in the presence or absence of DNase 1. Quantification of H3Cit levels compared with H3 levels is shown (bottom). AU, arbitrary units; H3Cit, citrullinated histone 3; H3, histone 3. The data are presented as mean ± s.e.m. ($n=4$). ***$P<0.001$ versus control mice; one-way analysis of variance, followed by Dunnett's *post-hoc* test. The PVDF membranes were cut based on molecular weight of respective protein using protein molecular weight marker and then probed with respective antibodies. (**b**) Western blot analysis (left) of the appearance of *E. carinatus* venom in tail tissue homogenates taken 8 h after venom (LD_{50}) injection in the presence or absence of DNase 1. *E. carinatus* venom (20 μg) served as a positive control. The image of the corresponding Ponceau-stained PVDF membrane (right) shows *E. carinatus* venom, 20 μg (lane I), and equal protein loading of the tail tissue homogenates (lane II–IV); $n=3$. (**c**) Immunofluorescence images showing the accumulation of venom toxins from *E. carinatus* venom (LD_{50})-injected mouse tail tissues sections in the absence (top row, middle) or presence of DNase 1 (100 U; top row, right). PBS-injected tail tissue served as a control (top row, left). The corresponding DIC images of the respective tissues are also shown (bottom row). Scale bars, 100 μm ($n=3$). (**d**) All the experiments in this group were performed simultaneously but the data are divided into five graphs (top three and bottom two) for clarity. Kaplan–Meier survival curves: *E. carinatus* venom, LD_{50} (red line) in all the graphs; co-injection of *E. carinatus* venom (LD_{50}) with 25 U DNase 1 (blue line), 50 U DNase 1 (green line), 100 U DNase 1 (violet line), 100 U DNase 1 pre-incubated with 50 μM actin (grey line) and 100 U DNase 1 followed by ED AV (black line). ED AV, effective dose of antivenom. ($n=10$). *$P<0.05$, ***$P<0.001$ and NS, non-significant between groups using the Log-rank test. See Supplementary Fig. 5 for the effect of DNase 1 on the lethal potency of *E. carinatus* venom (LD).

anti-DNA mAb (1:25) were added to the wells and incubated by shaking at 300 r.p.m. for 2 h at room temperature. Then, the wells were washed three times (with PBS, 300 μl each) and 100 μl of ABTS was added. After 20 min of incubation at room temperature in the dark, the absorbance was measured at 405 nm. To calculate NET percentage, fluorescence obtained from cells lysed with 0.5% Triton X-100 was considered as 100% NET formation. To demonstrate venom-induced NOX-dependent and/or NOX-independent NETosis, neutrophils were independently pre-incubated with DPI (20 μM) and/or DNP (750 μM) for 60 min at 37 °C and then incubated with *E. carinatus* venom (50 μg) for 180 min at 37 °C. PMA (50 nM) and A23187 (5 μM) were used as a positive control for inhibition of the NOX-dependent and NOX-independent pathways, respectively.

Detection of ROS. *E. carinatus* venom-stimulated ROS in neutrophils was quantified using DCFDA[29]. The neutrophils (2×10^5 cells per ml) were incubated with increasing doses of *E. carinatus* venom (5–50 μg ml^{-1}) for 30 min at 37 °C. After incubation, DCFDA (10 μM) was added to determine ROS. The fluorescence was measured at 530 nm after exciting at 480 nm by using Varioskan multimode plate reader (Thermo Scientific) and expressed as pmol DCF formed per mg protein. Further to demonstrate venom-induced NOX-dependent and/or NOX-independent ROS production, neutrophils were independently pre-incubated with DPI (20 μM) and/or DNP (750 μM) for 60 min at 37 °C and then stimulated with *E. carinatus* venom (50 μg) for 30 min at 37 °C. PMA (50 nM) and A23187 (5 μM) were used as a positive control.

Immunocytochemistry. Neutrophils (2×10^5 cells per ml) were seeded on 13 mm round coverslips placed in 24-well culture plates in 500 μl of DMEM with 2% HSA and allowed to adhere to the coverslips for 30 min at 37 °C and 5% CO_2. Then, the cells were independently stimulated with PMA (50 nM) and the *E. carinatus* venom

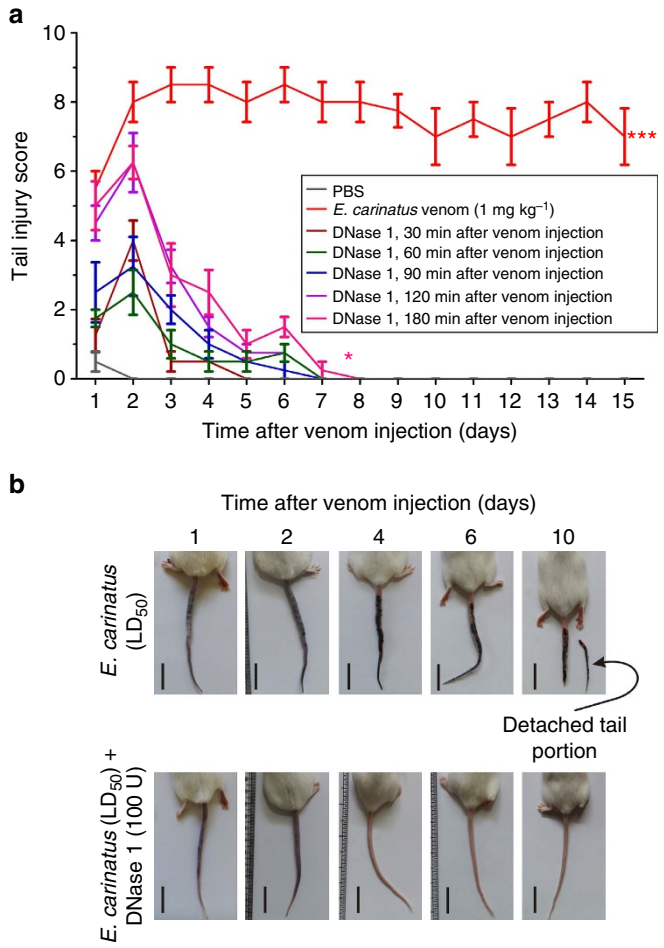

Figure 8 | DNase 1 treatment prevents *E. carinatus* venom-induced tissue destruction in the challenge study. (**a**) The graph represents the continued high injury score in *E. carinatus* venom (LD_{50})-injected mouse tails (red line), whereas the administration of 100 U DNase 1 at various times (30–180 min post-venom injection) decreased the tail injury score. The data are presented as mean ± s.e.m. ($n=10$). $^{*}P<0.05$, $^{***}P<0.001$ versus PBS injected control mice; one-way analysis of variance, followed by Dunnett's *post-hoc* test. (**b**) Representative photographs of mice taken on different days after injection. The mice were injected with *E. carinatus* venom (LD_{50}; top row) or co-injected with *E. carinatus* venom (LD_{50}) and DNase 1 (100 U; bottom row); the mice in the latter group recovered and normal tail morphology was restored on day 4 onwards (bottom, third). Scale bars, 2 cm ($n=10$).

(25 and 50 μg ml^{-1}) for 2.5 h, fixed using 4% paraformaldehyde, permeabilized using 1% Triton X-100 and blocked with 1% bovine serum albumin for 1 h at room temperature. The cells were incubated with a primary antibody against H3Cit (1:1,000) overnight at 4 °C and then with AlexaFluor 488-conjugated goat anti-rabbit IgG (1:1,500) for 2 h at room temperature. Hoechst 33342 (1:10,000) was used to stain for DNA. The images were acquired on a BA410 fluorescence microscope (Motic) attached to a DS-Qi2 monochrome CMOS sensor camera (Nikon) using a CCIS EC-H Plan Achromatic × 20 or × 40/0.65 objective lens and NIS-Elements D software (Version 4.3.00 64-bit). Images were analysed using the ImageJ software.

Scanning electron microscopy. Neutrophils (2×10^5 cells per ml in 500 μl DMEM with 2% HSA) were seeded on 13 mm round coverslips, placed in 24-well culture plates and allowed to attach to the coverslips for 30 min at 37 °C. The neutrophils were then stimulated with *E. carinatus* venom (50 μg ml^{-1}) for 2.5 h at 37 °C, fixed in 2.5% glutaraldehyde and post-fixed in 0.5% osmium tetroxide for 30 min. Then, the coverslips were incubated in 1% tannic acid for 30 min, with 0.5% osmium tetroxide for 30 min and dehydrated with a graded series of alcohol (30–100%) for 5 min each. The coverslips were dried in a desiccator for 24 h and the coverslips containing specimens were coated with a carbon layer using a thin layer evaporator. The samples were visualized using a Zeiss EVO LS15 scanning electron microscope.

Venom-induced mouse tail tissue destruction and lethality. *E. carinatus* or *N. naja* venom (LD_{50}/LD dissolved in 50 μl PBS) was subcutaneously administered to the groups of mice ($n=10$) 3 cm distal to the base of the tail. The lethal dose of venom was determined in a pilot study (*E. carinatus* venom $LD_{50}=1$ mg per kg body weight and LD = 1.5 mg per kg body weight and *N. naja* venom LD = 0.75 mg per kg body weight). The time of death and tail injuries were recorded for each mouse. The severity of the tail injury was judged visually and scored according to a 10 point scale; 0 = no injury, 1 = oedema, 2 = oedema with minor haemorrhage, 4 = oedema with haemorrhage causing less than 25% tail discolouration, 6 = oedema and major haemorrhage or wound causing 25–50% tail discolouration, 8 = oedema and major haemorrhage or wound causing 50–75% tail discolouration, 10 = oedema and major haemorrhage or wound causing more than 75% tail discolouration. The tail injury observations were recorded every day for 15 days after venom injection. To assess the effects of DNase 1 on tail haemorrhage, *E. carinatus* venom (LD_{50}/LD) was co-injected independently with 25, 50 or 100 U DNase 1. In the challenge study, 100 U DNase 1 was administered ~5 mm distal to the venom injection site 30, 60, 90, 120 or 180 min after the *E. carinatus* venom (LD_{50}) injection. To assess the effect of DNA on venom lethality, *E. carinatus* venom (LD_{50}/LD) was incubated with calf thymus DNA in a 1:1 (w/w) ratio for 10 min at 37 °C and injected subcutaneously into the tail. Appropriate controls were maintained according to the assay requirements.

Histopathological studies. The venom-induced tail tissue destruction and the presence of NETs in the venom-injected tail tissues were examined in H&E-stained tissue sections. The respective tissues were dissected from the venom injection site, fixed overnight in buffered formalin and subjected to dehydration with different grades of alcohol and chloroform mixture. The processed tissues were embedded in molten paraffin wax, and 10-μm-thick sections were prepared using a microtome. The sections were stained with H&E, observed under an Axio Imager.A2 microscope (Zeiss) and photographed.

Immunohistochemistry. The localization of H3Cit, Ly6G/lactoferrin and DNA in mouse tail tissue was examined by immunofluorescence microscopy. The mouse tail tissue was dissected from the *E. carinatus* venom-injected normal and neutropenic mice, processed, embedded in solidifying paraffin wax and cut into 10-μm-thick cross/longitudinal sections. The sections were deparaffinized by incubating the slides overnight at 55 °C and subjected to xylene clearance for 5 min. Furthermore, the sections were rehydrated with different grades of alcohol (100–50%). The antigens were retrieved by incubating the slides with Tris-EDTA buffer (pH 9.0) in a steamer for 45 min. The tissues were permeabilized using 1% Triton X-100 and incubated with primary antibodies against H3Cit (1:1,000) overnight at 4 °C, followed by incubation with an AlexaFluor 488-conjugated goat anti-rabbit IgG antibody (1:500) for 2 h in the dark at room temperature. The sections were then incubated with an AlexaFluor 647-conjugated anti-mouse Ly6G antibody (1:200) for 3 h at room temperature or anti-mouse lactoferrin antibody (1:500) for overnight at 4 °C, followed by incubation with an AlexaFluor 647-conjugated goat anti-mouse IgG antibody (1:500) for 2 h in the dark at room temperature. Hoechst 33342 (1:10,000, 1 μg ml^{-1}) was used to stain DNA. Images were acquired with a BA410 fluorescence microscope (Motic) attached to a DS-Qi2 monochrome CMOS sensor camera (Nikon) using a CCIS EC-H plan achromatic × 10/0.25 and × 40/0.65 objective lens and NIS-Elements D software (Version 4.3.00), or using a confocal microscope (Zeiss LSM 510 Meta). The appropriate controls were maintained.

The accumulation of venom toxins in *E. carinatus*/*N. naja* venom-injected tail tissues after 8 h of venom injection in the presence and absence of DNase 1/actin were detected using the appropriate rabbit polyclonal antibodies (2 μg ml^{-1}), followed by an AlexaFluor 488-conjugated goat anti-rabbit IgG secondary antibody (1:500). The appropriate controls were maintained.

Rabbit immunization and IgG purification. Rabbits were independently immunized against *E. carinatus* and *N. naja* venoms, and IgGs were purified[54]. *E. carinatus* (200 μg) or *N. naja* (100 μg) venoms were diluted in 100 μl PBS, thoroughly mixed with an equal volume of Freund's complete adjuvant and intradermally injected into female rabbits at several sites. Three booster doses of venom were administered at the same concentration and an equal volume of Freund's incomplete adjuvant at weekly intervals. Blood was drawn from the marginal ear vein on the ninth day after the third booster dose and allowed to coagulate for 24 h at 8–10 °C to obtain the antiserum. The antiserum was subjected to ammonium sulfate precipitation to obtain the crude IgG fraction, which was then subjected to Protein A-agarose column chromatography. The column was equilibrated with PBS and 5 mg of the crude IgG fraction in 2 ml of PBS was loaded and eluted using 0.2 M glycine-HCl buffer, pH 2.9. After reading the optical density at 280 nm, 1 ml aliquots were collected, pooled and then neutralized using 1 M Tris-HCl buffer, pH 8.0. The samples were subjected to dialysis against PBS. Aliquots of antibodies with 2 mg ml^{-1} concentration were prepared and stored at −20 °C and used for the study.

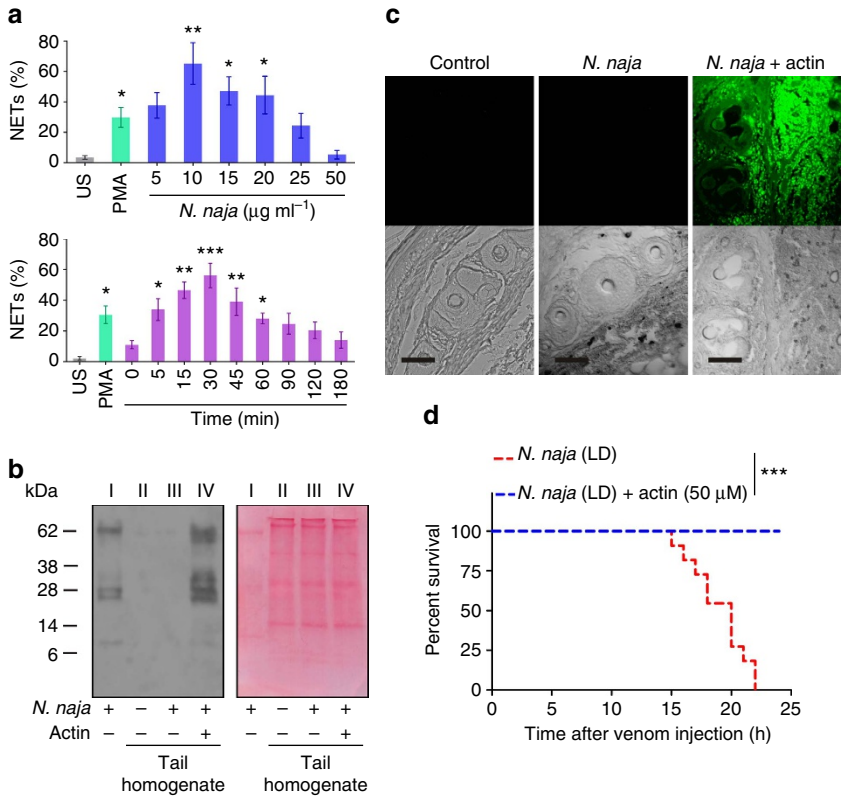

Figure 9 | DNase activity of *N. naja* venom is essential for degrading NETs and increasing its lethal potency. (**a**) *N. naja* venom-stimulated NET formation was quantified using MPO-DNA capture ELISA in both dose- (top) and time-dependent (bottom) assays. US, unstimulated cells. The results are expressed as the percent increase relative to the US; mean ± s.e.m. ($n=6$). $^{*}P<0.05$, $^{**}P<0.01$, $^{***}P<0.001$ versus the US; one-way analysis of variance, followed by Dunnett's *post-hoc* test. PMA (50 nM) served as a positive control. (**b**) Western blot analysis (left) of the appearance of *N. naja* venom in tail tissue homogenates taken 8 h after venom (LD) injection in the presence or absence of actin (50 μM). *N. naja* venom (20 μg) served as a positive control. The image of the corresponding Ponceau-stained PVDF membrane (right) shows *N. naja* venom, 20 μg (lane I) and equal protein loading of tail tissue homogenates (lane II–IV); $n=3$. (**c**) Representative immunofluorescence images were captured 8 h after *N. naja* venom (LD) injection in mouse tails and did not show an accumulation of venom (top row, middle), similar to the PBS-injected control tissue (left). However, *N. naja* venom accumulated when the venom (LD) was pre-treated with 50 μM actin before injection. The corresponding DIC images of respective tissues are shown (bottom). Scale bars, 100 μm ($n=3$). (**d**) Kaplan–Meier survival curves after injections of *N. naja* venom (LD, red line) or *N. naja* venom (LD) pre-incubated with 50 μM actin (blue line); $n=10$. $^{***}P<0.001$; Log-rank test.

Neutropenic mouse model. Neutropenia was induced in mice using cyclophosphamide[55]. Briefly, female Swiss albino mice were intraperitoneally injected with cyclophosphamide in two doses totaling 250 mg kg^{-1}. Initially, 150 mg kg^{-1} was administered in 500 μl saline as the first dose on day 1, and the second dose of 100 mg kg^{-1} was administered on day 4. Blood samples were drawn from the retro-orbital plexus on days 4 and 5, and subjected to total and differential cell counts using a Neubauer chamber and microscopic examination of Wright-stained smears. Then, the neutropenic mice were used on day 4, where complete neutrophil depletion was found (Supplementary Table 1), to determine the tail tissue destruction activity and lethality ($n=10$) of the *E. carinatus* venom (LD_{50}) in the presence and absence of DNase 1 (100 U) as described above.

Western blot analysis. In the *ex vivo* experiment, the levels of H3Cit, histone H3 and PAD4 in human neutrophils incubated with 5, 25 and 50 μg ml^{-1} of *E. carinatus* venom for 2.5 h at 37 °C were observed by western blotting. In the *in vivo* studies, the levels of H3Cit/histone H3/MPO were determined in mice tail homogenates. The mice were divided into three different treatment groups: (i) *E. carinatus* venom (LD_{50}) was injected into the mice at different time intervals (2, 4, 8, 16 and 12 h; 3 and 10 days); (ii) *E. carinatus* venom (LD_{50}) was injected into normal and neutropenic mice for 8 h and (iii) *E. carinatus* venom (LD_{50}) was injected into mice in the presence or absence of DNase 1 (100 U) for 8 h. The accumulation of venom in tail tissue was observed using western blots of tail tissue homogenates from mice injected with *E. carinatus* venom (LD_{50}) in the presence or absence of DNase 1 (100 U) and mice injected with *N. naja* venom in the presence or absence of actin (50 μM) 8 h after injection using rabbit raised polyclonal antibodies raised against respective snake. Briefly, the treated human neutrophils and mouse tail portions (3 cm length of tail, with the injection site at the centre, were collected after the mice were anaesthetized and killed at the indicated time intervals in the respective experiments) were snap frozen and homogenized in RIPA buffer with protease inhibitor cocktails on ice. The homogenates were centrifuged at 15,000*g* for 15 min at 4 °C and equal amounts of protein were fractionated on SDS–PAGE and electroblotted onto polyvinylidene difluoride (PVDF) membranes. The blots were then incubated with primary antibodies (anti-H3Cit (1:750), anti-H3 (1:750), anti-PAD4 (1:2,000), anti-MPO (1:750), anti-*E. carinatus* (2 μg ml^{-1}) and anti-*N. naja* (2 μg ml^{-1})) overnight at 4 °C and subsequently with the appropriate horseradish peroxidase-conjugated secondary antibody (1:5,000) for 2 h at room temperature. The blots were developed with an enhanced chemiluminescence substrate and visualized (Alliance 2.7, Uvitec). To confirm equal loading, the glyceraldehyde 3-phosphate dehydrogenase (GAPDH) levels were observed by incubating the membrane with an anti-GAPDH antibody (1:1,000). For the venom accumulation study, the electroblotted membranes were stained with Ponceau to confirm equal protein loading. ImageJ software was used to quantify the blots. Images have been cropped for presentation. Uncropped images are presented in Supplementary Fig. 11.

Detection of DNase activity of the venom. The DNase activity of the venom was determined by agarose gel electrophoresis/DNase radial diffusion assay. Briefly, 750 ng of calf thymus DNA was independently incubated with the *N. naja* (5–50 μg ml^{-1}) venom for 60 min, at 37 °C in a final volume of 50 μl PBS. The reaction mixture was subjected to electrophoresis on 0.8% agarose gels at 50 V in TAE buffer (40 mM Tris-base and 1 mM EDTA, pH 8.0) for 1 h. Calf thymus DNA that had been treated with DNase 1 (5 U) served as a positive control. After electrophoresis, the gel was visualized and photographed on a ultraviolet transilluminator (Alliance 2.7, Uvitec). The *N. naja* venom DNase activity was inhibited by incubating the sample with actin (5–25 μM) for 10 min at 37 °C. Image has been cropped for presentation. Uncropped image is presented in Supplementary Fig. 11.

For radial diffusion assay, molten agarose (5 ml, 2.1%) containing herring sperm DNA (1 mg ml^{-1}) and ethidium bromide (1 μg ml^{-1}) was poured into wells of six-well culture plates and allowed to solidify. Seven-millimetre diameter

wells were created at the centre of the dishes and loaded with *E. carinatus* venom (50–500 μg per well) for 24 h at 37 °C. DNase 1 (10 U) served as the positive control. After incubation, the plates were visualized and photographed on a ultraviolet transilluminator (Alliance 2.7, Uvitec).

Effect of *E. carinatus* venom on serum DNase activity. Serum DNase activity was determined using the radial diffusion method. Molten agarose (5 ml, 2.1%) containing herring sperm DNA (1 mg ml^{-1}) and ethidium bromide (1 μg ml^{-1}) was poured into 35 mm diameter Petri dishes and allowed to solidify. Seven-millimetre diameter wells were created at the centre of the dishes and loaded with human serum (200 μl), which was independently pre-incubated with 250, 500 and 1,000 μg of *E. carinatus* venom for 1 h at 37 °C. DNase 1 (10 U) served as the positive control. After 24 h of incubation at 37 °C, the plates were visualized and photographed on a ultraviolet transilluminator (Alliance 2.7, Uvitec).

DNA-venom capture ELISA. The interaction between DNA and *E. carinatus* venom was studied using DNA–venom capture ELISA with Cell Death ELISA^{PLUS}, Roche. Neutrophils (1×10^5 cells per 500 μl) were incubated with *E. carinatus* venom (25, 50 and 100 μg) for 2.5 h to ensure NET formation and binding of the *E. carinatus* venom to NET DNA. Next, the DNA–histone complex provided in the assay kit (40 μl) was incubated with *E. carinatus* venom (50 μg) in a final volume of 500 μl made up with incubation buffer for 2.5 h to serve as a positive control. The concentrations of the DNA–histone complex and *E. carinatus* were determined in our pilot study, where 40 μl of the DNA–histone complex bound to a maximum of 50 μg of *E. carinatus* venom. After incubation, the samples were centrifuged at 20*g* for 5 min at room temperature, and 20 μl of the supernatant was added to streptavidin-coated 96-well plates, along with 80 μl of an anti-histone-biotin antibody (1:20) for 2 h, followed by shaking at 300 r.p.m. at room temperature. The plate was washed (three times with incubation buffer, 300 μl each) and incubated with a rabbit polyclonal antibody against *E. carinatus* venom (1:1,000) for 2 h, followed by shaking at 300 r.p.m. at room temperature. Then, the plate was washed (three times with incubation buffer, 300 μl each) and incubated with an horseradish peroxidase-conjugated anti-rabbit secondary antibody (1:5,000) for 2 h by shaking at 300 r.p.m. at room temperature in the dark. The wells were again washed (three times with incubation buffer, 300 μl each) and 100 μl of the ABTS peroxidase substrate was added. After 20 min of incubation at room temperature in the dark, the absorbance was measured at 405 nm using Varioskan multimode plate reader (Thermo Scientific). The percent increase in the absorbance with respect to the control indicated the binding of *E. carinatus* venom toxins to the DNA–histone complex or NETs.

Detection of DNA–venom interaction by non-denaturing PAGE. The interaction between DNA and *E. carinatus* venom was also studied by electrophoresis. We used the amplified PCR product (160 bp) that was produced by multiplex PCR using the mecA P4 (**5′**-TCCAGATTACAACTTCACCAGG-**3′**) and mecA P7 (**5′**-CCACTTCATATCTTGTAACG-**3′**) primers as previously described[56]. The reaction was carried out with a DreamTaq Green DNA Polymerase kit consisting of 200 μM dNTPs, 1.25 U DreamTaq DNA polymerase and 100 ng template DNA (Genomic source *S. aureus*). PCR amplification was performed in a Surecycler 8800 (Agilent Technologies) using the following conditions: initial denaturation for 15 min at 95 °C; 35 cycles consisting of denaturation for 30 s at 95 °C, annealing for 30 s at 53 °C, elongation for 1 min at 72 °C and post-extension for 5 min at 72 °C. The amplified fragment/amplicon (250 ng) was incubated with increasing concentrations of *E. carinatus* venom (5–50 μg) for 1 h at 37 °C in a final reaction volume of 20 μl. Then, the reaction mixture was separated on non-denaturing PAGE (7.5%) using 0.5 × Tris-borate-EDTA buffer, pH 8.5, with a constant voltage of 50 V for 4 h. The gel was visualized on a ultraviolet transilluminator (Alliance 2.7 Uvitec) after staining with ethidium bromide (1 μg ml^{-1}) for 30 min at room temperature.

The interaction between the DNA and the *E. carinatus* venom was disrupted by the addition of an equal amount of chloroform and isoamyl alcohol (24:1, v/v) followed by two volumes of pre-chilled isopropanol and incubation overnight at − 20 °C. The samples were then centrifuged at 18,000*g* for 10 min and the pellets were dissolved in sterile distilled water and resolved on a non-denaturing PAGE gel as described above. Images have been cropped for presentation. Uncropped images are presented in Supplementary Fig. 11.

Protein concentration measurement. The protein concentrations were determined using the method described by Lowry *et al.*[57].

Statistics. The data are presented as the mean ± s.e.m. of at least three independent experiments and were analysed using a two-tailed Student's *t*-test (unpaired), one-way analysis of variance, followed by Dunnett's *post-hoc* test or Bonferroni *post hoc* test for multiple comparisons as applicable. Lethality was analysed using the log-rank test after constructing Kaplan–Meier curves. All analyses were done using GraphPad Prism software (Version 5.0). The results were considered significant when $P<0.05$.

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Acknowledgements

K.K. thanks Professor T. V. Gowda, DOS in Biochemistry (Retired), University of Mysore, Mysuru, India, Professor P. S. Sastry, Department of Biochemistry (Retired), Indian Institute of Science, Bengaluru, India, and Professor Ram Rajasekharan, Director, AcSIR, CSIR-CFTRI, Mysuru for their support. G.D.K. thanks Professor Volker Brinkmann, Max Planck Institute for Infection Biology, Germany, for his kind suggestions for immunostaining, University Grants Commission, New Delhi, India, for the research fellowship and volunteers for blood donation. We thank Dr H. Krishnamurthy, Flow Cytometry and Confocal Microscopy Facilities, NCBS, TIFR, C-CAMP, Bengaluru, India, and Dr S. Chandranayaka, for their kind help in imaging facilities. We also thank Ms Mahitha Shree A., Mr Akshay V., Mr Madhusudan, Mr Yogesh, Mr Poornachandra Rao and Ms Deepthi for their kind help during the study. We thank Institution of Excellence (IOE), University of Mysore, Mysuru, India, for providing central instrumentation facilities. K.K. acknowledges the funding from the DBT (No.BT/PR5323/MED/30/818/2012), UGC-SAP (No. F3-14/ 2012 SAP-II) and VGST [VGST/K-FIST (2010-11)/GRD-36/2013-14]. K.S.G. acknowledges the funding from the DST (DST-SERB/LS-952/2012). The funders had no role in designing and analysis of data, decision to publish or preparation of the manuscript.

Author contributions

K.K., K.S.G. and G.D.K. conceived the idea, designed the research, discussed the data and wrote the paper; G.D.K. and M.S.S. performed the experiments, collected the data and analysed the data. M.S.S. and S.D. analysed and discussed some data. S.K.N., R.D.S., M.P., G.J.V. and B.S. performed some experiments.

Additional information

Supplementary Information accompanies this paper at http://www.nature.com/naturecommunications

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How to cite this article: Katkar, G. D. *et al.* NETosis and lack of DNase activity are key factors in *Echis carinatus* venom-induced tissue destruction. *Nat. Commun.* 7:11361 doi: 10.1038/ncomms11361 (2016).

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To

The National Coordinator

PMRF

Dear Sir/Madam,

This is to certify that Ms Senji Laxme R R(who is a PhD scholar and a PMRF fellow at CES, IISc) has completed a 25-hour teaching module for our Final Year BE Biotechnology Engineering students at our campus as per PMRF fellowship requirements during March-April 2023.

Thanking You,

Yours Sincerely

21/4/2023

H.G. Nagendra

Dr H.G. Nagendra
Professor & Head
Department of Biotechnology
Sir M. Visvesvaraya Institute of Technology
BANGALORE - 562157


"Venom Pharmacology"


origin


Introduction to Economics

S.No	Topics
1	
2	Snakes of Karnataka
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6	Nervous sytem and neurotoxicity
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13	Plant-based snakebite treatment
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17	Venomous mammals
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20	Parasitic wasps and their venom
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23	Immune response to venom
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26	Mimicry in snakes and other animals
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30	Spider venoms
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			Individual (10 e	
Students	**Content**	**Coherence**	**Understanding**	**Interaction**
PRANESH KULASEKHAR	6	7	7	7
SHRUTHI P	6	7	6	6
VRITHI RAJU	6	7	6	7
AASHITHA C SHEKAR	7	7	8	9
KAVYA BAI O P	7	7	8	9
MADHUMITHA K	0	0	0	0
NAGASHREE S	7	6	6	5
APARNA B S	7	6	6	5
DEEPIKA	7	7	6	5
SHREYA RAO	7	7	6	6
VIDYASHREE	7	6	6	5
ADVAITH K G	0	0	0	0
CHATURTHY	0	0	0	0
MAITHRI B M	0	0	0	0
MAHALAKSHMI	0	0	0	0
NIHARIKA K S	0	0	0	0
SMRITHI HUNSIGI	0	0	0	0
UMA MAHESHWARI	0	0	0	0
JHANVI RONI	0	0	0	0
URVIJA DUBEY	0	0	0	0
EMILEE GRACIA DOMNIC	8	8	8	8
DEVE SNEHA GOWDA	8	8	8	8
SYEDA DANIYA IMAN	8	8	8	8
UPPU AISHWARYA	8	8	8	8
SRINJANA RAHA	9	9	9	10
THEJASHREE M	9	9	9	10
TRISHA C	5	6	7	6
SAMARTH RAJE URS	8	7	7	8
ACHYUTH S V	8	7	7	8
GURURAJ	5	8	8	6
HRUTHIK KUMAR RAJU	5	0	0	0
RICHARD STEPHEN	8	6	6	

ach)			Group efforts (30)	Total	Ranking
Team work	Presentation	Attendance			
10	7	10	30	84	3
10	7	0	30	72	
10	7	0	30	73	
7	8	10	25	81	4
7	8	10	25	81	4
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6	7	10	25	72	
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7	6	0	25	64	
7	6	0	25	62	
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7	8	10	30	87	1
7	8	10	30	87	1
7	8	10	30	87	1
7	8	10	30	87	1
10	9	0	30	86	2
10	9	0	30	86	2
5	7	0	28	64	
8	8	10	28	84	3
8	8	10	28	84	3
6	7	0	28	68	
5	5	0	0	15	
8	8	0	28	64	

Comments

Great individual effort, attended both sessions, interacted with other teams. Better presentation expected.

Great content and understanding. Better team effort expected.

Best team. Great content, teamwork. Team attended both sessions. Could have been more interactive.

ontent, good understanding of content, very interactive and informative. Could have taken attendance more se

Attended both the sessions. Great content, understanding. Special mention for the efforts.

	SIR M VISVESVRAYA INSTITUTE OF TECHNOLOGY									
	Venom toxinology course attendance									
S. No	**Names**	**Course**	**02 March**	**09 March**	**16 March**	**23 March**	**30 March**	**13 April**	**20 April**	**20 April**
1	K S LASYA	BE	Yes	Yes	Yes	No	No	No	No	No
2	JHANVI RONI	BE	Yes	Yes	No	No	No	No	No	No
3	URVIJA DUBEY	BE	Yes	Yes	No	No	No	No	No	No
4	AASHITHA C SHEKAR	BE	Yes	No	No	Yes	Yes	Yes	Yes	Yes
5	ACHYUTH S V	BE	Yes	No	Yes	Yes	No	Yes	Yes	Yes
6	ADVAITH K G	BE	Yes	No	No	No	Yes	No	No	No
7	APARNA B S	BE	Yes	No	Yes	No	Yes	No	Yes	No
8	CHATURTHY	BE	Yes	No	No	No	No	No	No	No
9	DEEPIKA	BE	Yes	Yes	Yes	Yes	No	No	Yes	No
10	EMILEE GRACIA DOMNIC	BE	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
11	DEVE SNEHA GOWDA	BE	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
12	GURURAJ	BE	Yes	No	No	Yes	No	No	No	Yes
13	HRUTHIK KUMAR RAJU	BE	Yes	Yes	No	No	No	No	No	No
14	KAVYA BAI O P	BE	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
15	MADHUMITHA K	BE	Yes	Yes	No	No	Yes	No	No	No
16	MAHALAKSHMI	BE	Yes	Yes	Yes	Yes	No	No	No	No
17	MAITHRI B M	BE	Yes	Yes	Yes	No	No	No	No	No
18	NAGASHREE S	BE	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
19	NIHARIKA K S	BE	Yes	Yes	Yes	Yes	No	No	No	No
20	PRANESH KULASEKHAR	BE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
21	RICHARD STEPHEN	BE	Yes	Yes	No	No	Yes	No	No	Yes
22	ROHAN THOMAS CHERIAN	BE	Yes	No	No	No	No	No	No	No
23	SAMARTH RAJE URS	BE	Yes	No	No	Yes	No	No	Yes	Yes
24	SHREYA RAO	BE	Yes	Yes	No	No	No	No	Yes	No
25	SHRUTHI P	BE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No
26	SMRITHI HUNSIGI	BE	Yes	Yes	Yes	No	No	No	No	No
27	SRINJANA RAHA	BE	Yes	No	Yes	No	No	Yes	Yes	No
28	SYEDA DANIYA IMAN	BE	Yes	Yes	Yes	No	Yes	Yes	No	Yes
29	THEJASHREE M	BE	Yes	No	Yes	Yes	Yes	Yes	Yes	No
30	TRISHA C	BE	Yes	No	Yes	No	No	No	No	Yes
31	UPPU AISHWARYA	BE	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes
32	UMA MAHESHWARI	BE	Yes	No	Yes	No	No	No	No	No
33	VIDYASHREE	BE	Yes	No	Yes	No	No	No	Yes	No
34	VRITHI RAJU	BE	Yes	Yes	Yes	No	Yes	Yes	Yes	No
35	YAMUNA	BE	Yes	Yes	No	No	No	No	No	No
36	JANE	MTECH	Yes	Yes	No	No	No	No	No	No
37	YADUKIRAN	MTECH	Yes	Yes	No	No	No	No	No	No
38	AKSHATHA	MTECH	Yes	Yes	No	No	No	No	No	No
39	MANUDYUTH	MTECH	Yes	Yes	No	No	No	No	No	No
40	AYAN	MTECH	Yes	Yes	No	No	No	No	No	No