VIDYA ACADEMY OF SCIENCE & TECHNOLOGY TECHNICAL CAMPUS, Kilimanoor, Thiruvananthapuram

"A Unit of Vidya International Charitable Trust"

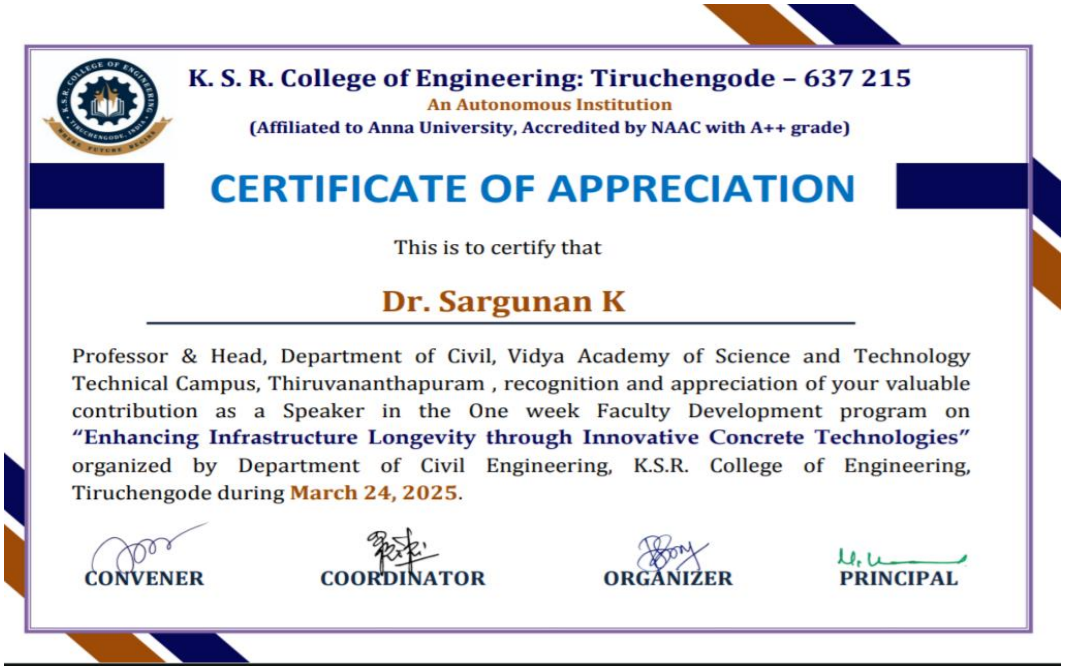
(Accredited by NAAC with B++ Grade)

MONTHLY REPORT – APRIL 2025

DEPARTMENT OF CIVIL ENGINEERING

➢ SPEAKER IN FACULTY DEVELOPMENT PROGRAM

Dr.K.Sargunan (HOD, CE) was the speaker in a One Week Faculty Development Programme on 'Enhancing Infrastructure Longevity through Innovative Concrete Technology', organised by the Department of Civil Engineering, K.S.R. College of Engineering, Tiruchengode, on March 24, 2025.



K. S. R. College of Engineering: Tiruchengode – 637 215

An Autonomous Institution

(Affiliated to Anna University, Accredited by NAAC with A++ grade)

CERTIFICATE OF APPRECIATION

This is to certify that

Dr. Sargunan K

Professor & Head, Department of Civil, Vidya Academy of Science and Technology Technical Campus, Thiruvananthapuram , recognition and appreciation of your valuable contribution as a Speaker in the One week Faculty Development program on "Enhancing Infrastructure Longevity through Innovative Concrete Technologies" organized by Department of Civil Engineering, K.S.R. College of Engineering, Tiruchengode during March 24, 2025.

CONVENER COORDINATOR ORGANIZER PRINCIPAL

VIDYA ACADEMY OF SCIENCE & TECHNOLOGY TECHNICAL CAMPUS, Kilimanoor, Thiruvananthapuram

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➢ S1 CE RESULT (2024 - 2028 BATCH) TOPPERS

➢ ACHIEVEMENT OF STAFF

- **COMPLETION OF FDP & NPTEL CERTIFICATION COURSE**

Dr.K.Sargunan (HOD-CE) successfully completed the 8 week NPTEL-AICTE Online Certification course on 'Plastic Waste Management' with a consolidated score of 77% in March 2025. He was also awarded an FDP certificate for the course.

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NPTEL-AICTE
Faculty Development Programme
(Funded by the MoE, Govt. of India)

This certificate is awarded to

SARGUNAN K

for successfully completing the course

Plastic Waste Management

with a consolidated score of 77 %

Prof. Andrew Thangaraj
NPTEL Coordinator
IIT Madras

(Jan-Mar 2025)

Roll No: NPTEL25CE45S346100003

Duration of NPTEL course : 8 Weeks

- **PAPER PUBLICATION**

Dr.K.Sargunan (HOD-CE) published a paper on 'Characterization of Nano - Clay Reinforced Polymer Composites: Enhancing Performance for Extreme Applications' in 'Journal of Polymer and Composites' in the month of January, 2025.

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STM JOURNALS

Journal of
Polymer & Composites

https://journals.stmjournals.com/JOPC/

ISSN: 2321-2810 (Online)
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Volume 13, Issue 2, 2025
DOI (Journal): 10.37591/JoPC

Research JoPC

Characterization of Nano-Clay Reinforced Polymer Composites: Enhancing Performance for Extreme Applications

Jaya Christiyan K G[1], Ashwin Sailesh[2], C.Karpagavalli[3], V.Kavimani[4], A.Vijayalakshmi[5], J. Sharmila[6], G.S.V. Seshu Kumar[7], Richa Khare[8], K.Sargunan [9,*]

Abstract

This study investigates the mechanical, thermal, water absorption, and chemical resistance properties of nano-clay-reinforced polymer composites and polymer concrete. The incorporation of 1-5 wt% nano-clay resulted in a significant enhancement across all properties. Mechanical testing revealed a 42.86% increase in tensile strength (35 MPa to 50 MPa), 40% improvement in flexural strength (50 MPa to 70 MPa), and 46.67% rise in compressive strength (75 MPa to 110 MPa), attributed to effective stress transfer and crack resistance provided by the nano-clay layers. The chemical structure and composition of nano-clay play a critical role in its interaction with polymer matrices. Organically modified nano-clays, such as montmorillonite (MMT), enhance compatibility with polymer chains through functional groups that promote intercalation and exfoliation. These interactions significantly affect the dispersion quality and interfacial bonding, which are crucial for stress transfer and load-bearing capacity. The presence of hydrophilic or hydrophobic functional groups determines the clay's affinity with different polymers, influencing the composite's mechanical and thermal performance. Thermal stability improved, with the decomposition temperature increasing by 16.67% (300°C to 350°C) and glass transition temperature rising by 25% (60°C to 75°C), demonstrating the barrier effect of nano-clay against heat transfer. Water absorption tests showed a 63.64% reduction in weight gain after 72 hours (5.5% to 2.0%), indicating enhanced durability in humid environments. Chemical resistance testing revealed remarkable improvements, with weight loss reduced by 73.33% in acidic conditions (3.0% to 0.8%), 80% in alkaline environments (2.5% to 0.5%), and 83.33% in saline solutions (1.8% to 0.3%). These results highlight the effectiveness of nano-clay in enhancing the structural, thermal, and durability characteristics of polymers, making them suitable for high-performance applications in construction, marine, aerospace, and chemical industries. The study underscores the potential of nano-clay-reinforced systems for replacing traditional materials in demanding environments.

***Author for Correspondence**
K. Sargunan
E-mail: gunancivil@gmail.com

[1]Assistant Professor, Department of Mechanical Engineering, M S Ramaiah Institute of Technology, Bangalore, Karnataka, India
[2]Assistant Professor, Department of Mechanical Engineering, Sri Sairam Institute of Technology, Chennai, Tamil Nadu, India
[3]Assistant Professor, Department of Artificial Intelligence and Data Science, Ramco Institute of Technology, Tamil Nadu, India
[4]Associate Professor, Department of Chemistry, Prathyusha Engineering College, Tiruvallur, Tamil Nadu, India
[5]Associate Professor, Department of Chemistry, R. M. K. Engineering College, Tiruvallur, Tamil Nadu, India
[6]Assistant Professor, Department of Chemistry, St. Joseph's College of Engineering, Chennai, Tamil Nadu, India
[7]Assistant Professor, Department of Mechanical Engineering, SRKR Engineering College, Bhim avaram, Andhra Pradesh, India
[8]Assistant Professor, Department of Chemistry, Amity School of Applied Sciences, Amity University Lucknow, Uttar Pradesh, India
[9]Professor, Department of Civil Engineering, Vidya Academy of Science and Technology Technical Campus, Thiruvananthapuram, Kerala, India

Received Date: December 13, 2024
Accepted Date: January 10, 2025
Published Date: January 23, 2025

Citation: Jaya Christiyan K G, Ashwin Sailesh, C. Karpagavalli, V. Kavimani, A. Vijayalakshmi, J. Sharmila, G.S.V. Seshu Kumar, Richa Khare, K. Sargunan. Characterization of Nano-Clay Reinforced Polymer Composites: Enhancing Performance for Extreme Applications. Journal of Polymer & Composites. 2025; 13 (2): 105–114p.

Keywords: Nano-clay reinforcement, polymer composites, mechanical properties, thermal stability, chemical resistance

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➢ MOU signed with CADD CENTRE, Kottarakara

The Department of Civil Engineering signed an MOU **for 3DS MAX software, with CADD CENTRE, Kottarkkara**. The program is aimed at providing Value-Added Course to the final year students of the department **(2022 - 26 Batch).**

➢ Completion of Coursera Course - Build A Free Website with Word Press

Ms.Pooja M Vijay (AP, CE), Ms.Adheena V S (AP, CE), Ms.Anjali Saji (AP, CE) and Ms.Nayana Gopan (AP, CE) completed an online **COURSERA** course on **BUILD A FREE WEBSITE WITH WORD** PRESS on 23.04.2025, Wednesday.

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Ms.Rini Madhavan Rajeev (AP, CE), Ms. Midhila M (AP, CE), Mr.Lenin Babu S (AP, CE) and Ms.Adheena V S completed an online **COURSERA** course on **INVESTMENT RISK MANAGEMENT** on 23.04.2025, Wednesday.

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➢ COMPLETION OF SHORT COURSE - INTERIOR DESIGN

Ms.Rini Madhavan Rajeev (AP, CE), Ms.Midhila M (AP, CE), Mr.Lenin Babu S (AP, CE), Ms.Anjali Saji (AP, CE) Ms.Pooja M Vijay (AP, CE), Ms.Adheena V S (AP, CE) and Ms.Nayana Gopan (AP, CE) completed an Online Short Course on **INTERIOR DESIGN** on 23.04.2025, Wednesday.

OHSC

MARKING SHEET FOR STUDENT WORK

Student Name:	Rinj Rajeev
Course:	Interior Design (Short Course)
Student Number:	1040631
Assignment:	1

UNDERSTANDING YOUR RESULT

The course is made up of units, which contain assignments. To complete each unit your work is assessed by your tutor along the way.

Note: If the student has achieved less than 40% marks in the assignment it means that the learning objectives have not met and the student will be required to resubmit the assignment.

UNIT RESULTS ARE GRADED AS:

Resubmit	Pass	Good	Very Good	Excellent
0-39%	40-59%	60-69%	70-89%	90+ %

FEEDBACK AND COMMENTS

Excellent

Date Graded:	23 Apr, 2025
Overall Grade:	Excellent
Tutor:	Ahsan Mehmood
Internal Verifier:	Shahzadi Amber

OHSC

MARKING SHEET FOR STUDENT WORK

Student Name:	Anjali Saji
Course:	Interior Design (Short Course)
Student Number:	1040619
Assignment:	1

UNDERSTANDING YOUR RESULT

The course is made up of units, which contain assignments. To complete each unit your work is assessed by your tutor along the way.

Note: If the student has achieved less than 40% marks in the assignment it means that the learning objectives have not met and the student will be required to resubmit the assignment.

UNIT RESULTS ARE GRADED AS:

Resubmit	Pass	Good	Very Good	Excellent
0-39%	40-59%	60-69%	70-89%	90+ %

FEEDBACK AND COMMENTS

Excellent

Date Graded:	23 Apr, 2025
Overall Grade:	Excellent
Tutor:	Ahsan Mehmood
Internal Verifier:	Shahzadi Amber

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OHSC

MARKING SHEET FOR STUDENT WORK

Student Name:	MIDHILA M
Course:	Interior Design (Short Course)
Student Number:	10406019
Assignment:	1

UNDERSTANDING YOUR RESULT

The course is made up of units, which contain assignments. To complete each unit your work is assessed by your tutor along the way.

Note: If the student has achieved less than 40% marks in the assignment it means that the learning objectives have not met and the student will be required to resubmit the assignment.

UNIT RESULTS ARE GRADED AS:

Resubmit	Pass	Good	Very Good	Excellent
0-39%	40-59%	60-69%	70-89%	90+ %

FEEDBACK AND COMMENTS

Excellent

Date Graded:	23 Apr, 2025
Overall Grade:	Excellent
Tutor:	Ahsan Mehmood
Internal Verifier:	Shahzadi Amber

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DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

➢ 2021 batch students got placed in SUTHERLAND

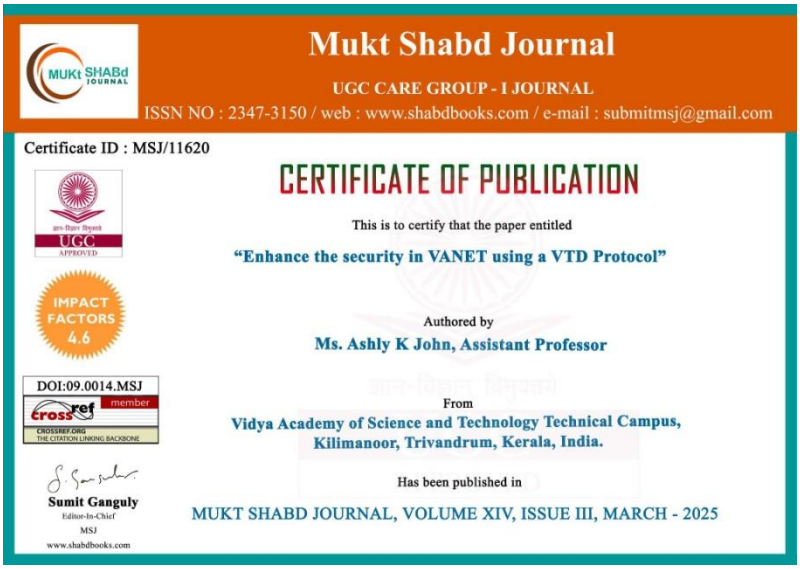
The Department of Computer Science and Engineering is proud to announce that 24 students of the final year batch (2021 - 2025 Batch) received placement offers from SUTHERLAND.

➢ Paper Published from Department of CSE

Ms.Vindhya Vijayan (AP, CSE) and Ms.Ansha Shakkeer (AP, CSE) published a paper "ROBUST AND AUDITABLE ACCESS CONTROL WITH MULTIPLE ATTRIBUTE

AUTHORITIES FOR PUBLIC CLOUD STORAGE" in Journal of Technology UGC Approved Group-2 Journal Volume 13 Issue 3, 2025.

- Ms. Ashly K John (AP,CSE) published a paper "ENHANCE THE SECURITY IN VANET USING A VTD PROTOCOL " in Mukt Shabd UGC Approved Group-1 Journal Volume XIV Issue 3, 2025.



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✓ ACHIEVEMENT OF STAFF

➢ FACULTY DEVELOPMENT PROGRAM

Dr.C. Brijilal Ruban, Professor & HoD, Department of CSE, has attended an online Faculty Development Programme on Artificial Intelligence (AI) Revolution in 2025 from 24 March to 28 March 2025 organized by Department of Computer Science and Engineering and department of Civil engineering, St. Joseph University.

➢ Workshop on Essential Aspects of Building Websites

The Department of Computer Science and Engineering, VAST TC organized a Workshop on "Essential Aspects of Building Websites" in association with CODIAC, Dept. of CSE on 20 March 2025. The program was organized by Dr.C.Brijilal Ruban, HoD-CSE. The Coordinator was Ms.Ansha Shakkeer, Assistant Professor, Department of Computer Science and Engineering. The resource person of the event was Ms.Saniya KS, Manager, White Track Technologies PVT Limited. Trivandrum. The Programme started with welcome speech by Ms.Darsana of S2 CSE followed by a brief talk by Dr.C.Brijilal Ruban HoD, CSE. Total of 95 students of S2 CSE and 16

staff members participated in this workshop. Positive responses were received from the students in the feedback session after the workshop. The event was structured in a full day session, followed by a Q & A session and the feedback was collected from all students. The resource persons explained important concepts about website designing, they uses HTML, CSS and JavaScript to create front-end design and explain what are the things the recruitment team expects from students.

POSTER:

Glimpse

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Certificate Sample

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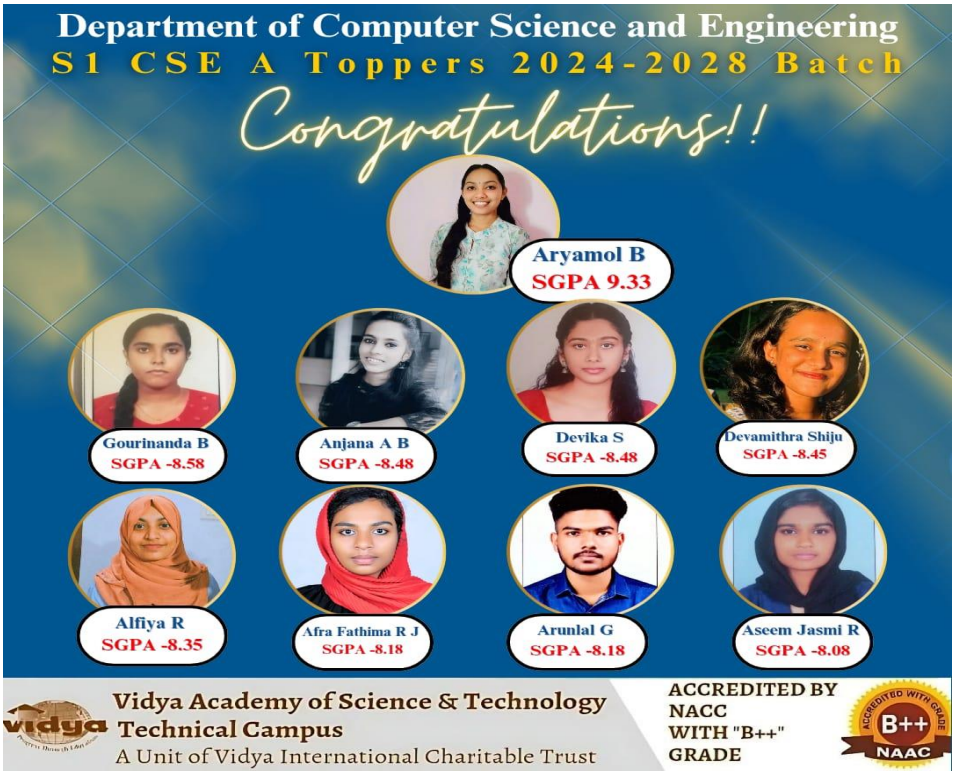
- **S1 CSE RESULT (2024 - 2028 BATCH) TOPPERS**



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- **Placement offers at Tech Mahindra**

  The Department of Computer Science and Engineering is proud to announce that 13 students of the final year batch (2021 - 2025 Batch) received placement offers from Tech Mahindra.

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- **Placement offers at Zigbill Software Solutions**

  The Department of Computer Science and Engineering is proud to announce that 2 students of the final year batch (2021 - 2025 Batch) received placement offers from Zig bill Software Solutions.

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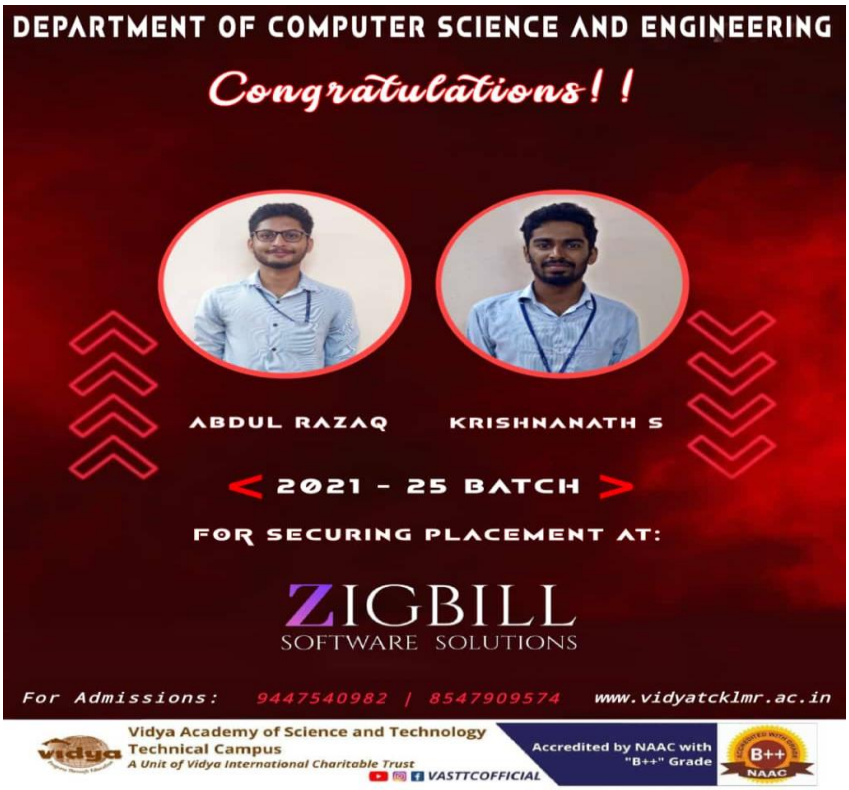

- **Placement offers at UST Global**

  Pranav P, Noel Biju John and Aswin A S, our final year CSE students who got placed at one of the largest MNCs, UST Global.

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➢ CONDUCTED ONLINE WORKSHOP ON PYTHON KICKSTART

The Department of Computer Science and Engineering, VAST- TC organized a One Week Online Workshop on "Python Kickstart: Fundamentals for Beginners" from 7th April 2025 to 12th April 2025. The resource persons of the event were Ms.AshlyKJohn, AP-CSE, Ms.Seenamole J and Ms.Rejin Moncy A, AP-CSE.

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

➢ ACHIEVEMENT OF STAFF

- **FACULTY DEVELOPMENT PROGRAMME**

Mr.Chandu C B
(AP ECE)

Ms.Sreejitha S G
(AP ECE)

Mr.CHANDU C.B (AP, ECE) and Ms.SREEJITHA S.G (AP, ECE) successfully participated in the One Week Online Faculty Development Program on "Harnessing Virtual Labs For Effective Students Engagement" organized by the Department of Mechanical Engineering, Lendi Institute of Engineering and Technology, Vizianagaram Andhra Pradesh, in association with National Institute of Technology Karnataka, Surathkal, from 17/03/25 to 21/03/2025.

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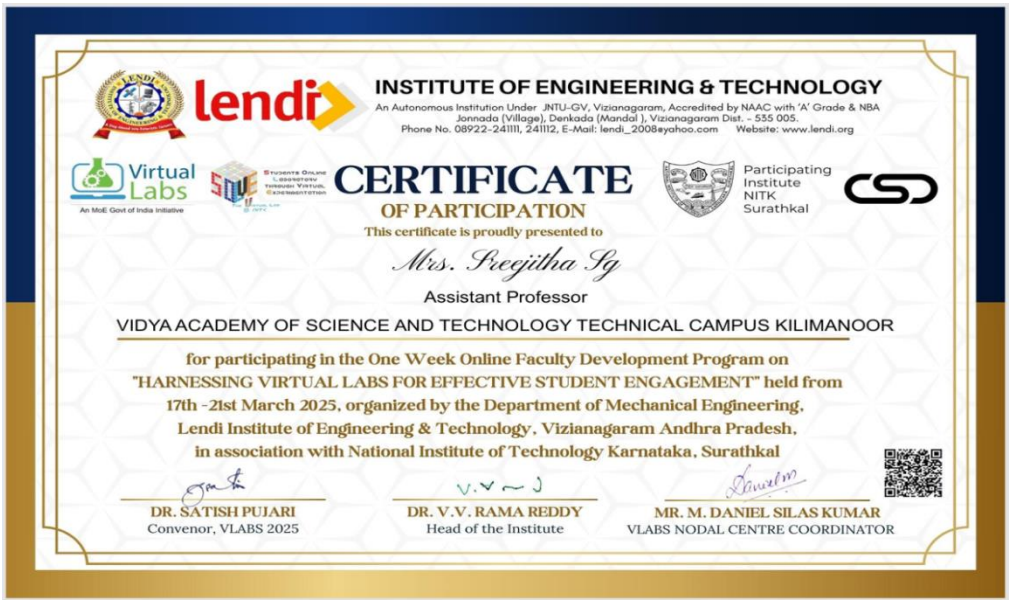

INSTITUTE OF ENGINEERING & TECHNOLOGY

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Jonnada (Village), Denkada (Mandal), Vizianagaram Dist. - 535 005.
Phone No. 08922-241111, 241112, E-Mail: lendi_2008@yahoo.com Website: www.lendi.org

Virtual Labs — An MoE Govt of India Initiative

CERTIFICATE
OF PARTICIPATION

Participating Institute NITK Surathkal

This certificate is proudly presented to

Mrs. Sreejitha Sg

Assistant Professor

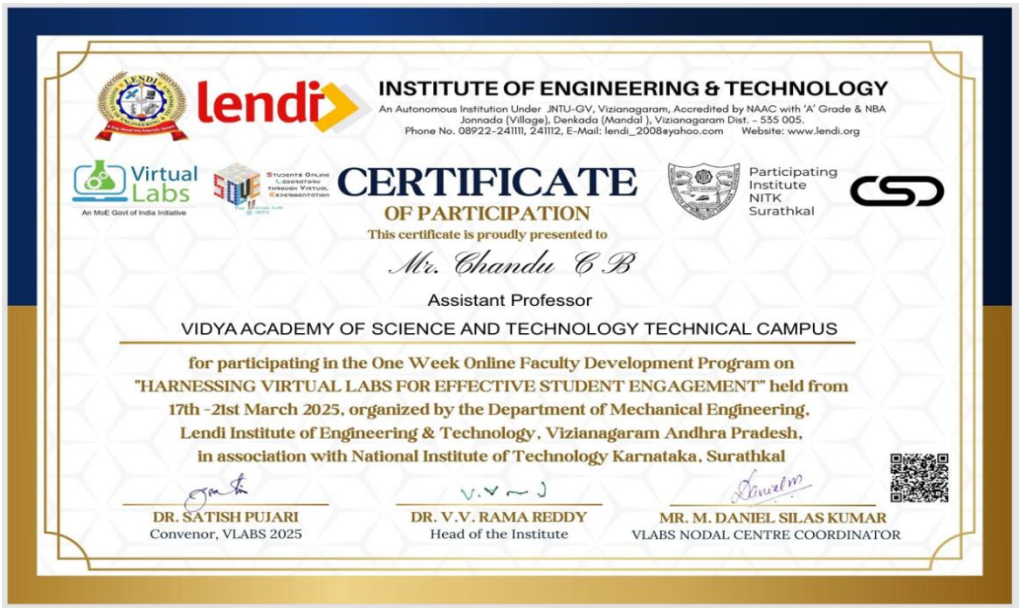
VIDYA ACADEMY OF SCIENCE AND TECHNOLOGY TECHNICAL CAMPUS KILIMANOOR

for participating in the One Week Online Faculty Development Program on "HARNESSING VIRTUAL LABS FOR EFFECTIVE STUDENT ENGAGEMENT" held from 17th -21st March 2025, organized by the Department of Mechanical Engineering, Lendi Institute of Engineering & Technology, Vizianagaram Andhra Pradesh, in association with National Institute of Technology Karnataka, Surathkal

DR. SATISH PUJARI
Convenor, VLABS 2025

DR. V.V. RAMA REDDY
Head of the Institute

MR. M. DANIEL SILAS KUMAR
VLABS NODAL CENTRE COORDINATOR



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Phone No. 08922-241111, 241112, E-Mail: lendi_2008@yahoo.com Website: www.lendi.org

Virtual Labs — An MoE Govt of India Initiative

CERTIFICATE
OF PARTICIPATION

Participating Institute NITK Surathkal

This certificate is proudly presented to

Mr. Chandu C B

Assistant Professor

VIDYA ACADEMY OF SCIENCE AND TECHNOLOGY TECHNICAL CAMPUS

for participating in the One Week Online Faculty Development Program on "HARNESSING VIRTUAL LABS FOR EFFECTIVE STUDENT ENGAGEMENT" held from 17th -21st March 2025, organized by the Department of Mechanical Engineering, Lendi Institute of Engineering & Technology, Vizianagaram Andhra Pradesh, in association with National Institute of Technology Karnataka, Surathkal

DR. SATISH PUJARI
Convenor, VLABS 2025

DR. V.V. RAMA REDDY
Head of the Institute

MR. M. DANIEL SILAS KUMAR
VLABS NODAL CENTRE COORDINATOR

VIDYA ACADEMY OF SCIENCE & TECHNOLOGY TECHNICAL CAMPUS, Kilimanoor, Thiruvananthapuram

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➢ CONDUCTED WORKSHOP: "CREOVATE"

The Department of ECE at Vidya Academy of Science and Technology, Technical Campus, Kilimanoor, in collaboration with IEEE VAST TC and ELECTA, hosted **CREOVATE 2025** on April 16, 2025. The event welcomed Higher Secondary School students for a day filled with innovation, learning, and fun. Highlights included hands-on workshops, creative tech challenges, an exciting gaming arena, and interactive sessions with experts. Designed to inspire and engage young minds, CREOVATE offered a perfect platform to explore the world of technology in a vibrant and energetic setting.

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Photos of the event

Giving Prizes to the Treasure Hunt Winners

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➢ S1 ECE RESULT (2024-2028) BATCH) TOPPERS

"Congratulations, students, on your great achievement!"

✓ ACHIEVEMENT OF STAFF

➢ FACULTY DEVELOPMENT PROGRAM

Ms.Anjana N (AP-ECE)

VIDYA ACADEMY OF SCIENCE & TECHNOLOGY TECHNICAL CAMPUS, Kilimanoor, Thiruvananthapuram

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(Accredited by NAAC with B++ Grade)

Ms.ANJANA N (AP, ECE) of Successfully participated in the 3 Days Faculty Development Program on **"LaTeX for Academics: Writing, Research and Beyond"** organized by the Department of Electronics and Communication Engineering, NSS College of Engineering Palakkad from 10/04/2025 to 12/04/2025.

NSS COLLEGE OF ENGINEERING
PALAKKAD-678008
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

CERTIFICATE OF PARTICIPATION

This is to certify that Ms ANJANA N of Vidya Academy of Science and Technology Technical Campus Kilimanoor has participated in the three-day Faculty Development Programme on ***'LaTeX for Academics: Writing, Research and Beyond'*** *from 10.04.2025 to 12.04.2025, organized by the Department of Electronics and Communication Engineering, NSS College of Engineering, Palakkad.*

Prof. Reshmi S, Coordinator
Prof. Saranya R, Coordinator
Dr. Sreeleja N Unnithan, Head of the Department
Dr. Rajeev N, Principal

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DEPARTMENT OF MECHANICAL ENGINEERING

✓ **ACHIEVEMENT OF STUDENTS**

🚲 No Fuel? No Problem! Mechanical Engineering Students of Vidya Academy TC Kilimanoor Develop Compressed Air-Powered Bike

In a remarkable leap toward sustainable and pollution-free transportation, final-year Mechanical Engineering students of Vidya Academy of Science and Technology Technical Campus, Kilimanoor have successfully developed a prototype of a Super Air Bike — a two-wheeler that runs entirely on compressed air, without the use of any conventional fuel.

The innovative vehicle, built from repurposed components of an old motorcycle, uses specially designed high-pressure air cylinders as its energy source. The compressed air is released through custom-built gear mechanisms that convert the stored energy into mechanical motion, propelling the bike forward.

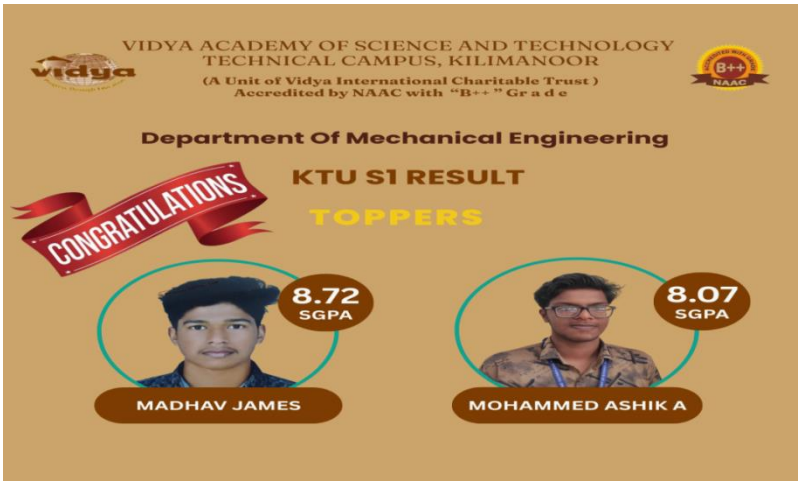
"This project was driven by our desire to reduce air pollution and find alternative green solutions in the mobility sector," said the student team, adding that the bike can be refilled wherever air compressors are available, making it a practical option in real-world conditions.

The team behind the project includes **Abhijith O Pillai, P Anoop, R Arjun, Ashwin Suresh, and Jerin Jacob**, all final-year B.Tech students. The initiative was guided by **Assistant Professors Mr. Rahul Raj and Mr. Sajith Krishnan R**, under the mentorship of **Prof. Arun K L, Head of the Mechanical Engineering Department**, and **Dr. T. Madhav Raj Ravikumar, Principal** of the institution. Technical staff **Mr. S. Suraj** and **Mr. K R Anilkumar** also contributed significantly to the successful execution of the project in the college workshop.

With a modest project cost of **₹30,000**, the Super Air Bike stands as a testament to innovation on a budget. The students are now looking ahead to the next phase—converting compressed air into a liquefied state to improve storage efficiency and extend the vehicle's travel range.

Commending the students, **College Director Brigadier (Retd.) K S Shaji** remarked, *"Ideas like these are a true contribution to India's vision of sustainable and pollution-free transportation. It is heartening to see young engineers leading the way toward a cleaner future."*

➢ Department of Mechanical Engineering Celebrates KTU S1 Toppers



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"A Unit of Vidya International Charitable Trust"

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Vidya Academy of Science and Technology Technical Campus, Kilimanoor, is proud to announce the outstanding achievements of its students from the Department of Mechanical Engineering in the KTU S1 examinations.

Madhav James emerged as the top performer, securing an impressive SGPA of **8.72**, followed closely by Mohammed Ashik A with an SGPA of **8.07**. Their dedication and hard work have brought laurels to the department and stand as an inspiration for all fellow students.

The Management, Principal, Faculty, and Staff of Vidya Academy extend their heartfelt congratulations to both Madhav and Mohammed for their remarkable accomplishment. The department looks forward to seeing more such exceptional performances in the future, upholding the tradition of academic excellence. **Congratulations to the achievers!**

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SUGGESTIONS & SUPPORT

We value your suggestions for improvement. For contact or assistance on related matters, please send us an email to wednesdaynews@vidyatcklmr.ac.in. We shall get back to you at the earliest.

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