Installation of Solar Panels at Kurukkan Kundu Ooru Attappadi Tribal Village, Palakkad

An Immersive Internship for the students of

Government Engineering College Palakkad

Funded by

(CoRaL)

Collaborative Research and Learning

Project Details

Programme	CORAL funded project
Title of project	**Immersive Internship for the students of GEC Palakkad**
Dates and Conduct of Programme	Phase I - Initial Visit for assesment - Nov. 2022 Phase II- Second Visit for assesment - Feb. 2-3, 2023 Phase III - Third Visit for assesment - Jan. 18-19, 2024 - Training programme - March 26 - 27, 2024 - Fourth Visit for assesment - April. 22, 2024 - Final Installation - April. 29-20, 2024
Principal Investigator	Dr. Vinita Chellappan, Professor (EE)
Project Team	Prof. Navaneeth M S, AP (ME) Prof. Vidhun M, AP (EE) Dr. Dhanya K M, Asso. Professor (IT) Prof. Abdul Kareem P V, AP (EE) Prof. Vishnuprasad K, AP (EE) Dr. Joseph Peter, AP (EE)
Institution	Government Engineering College Palakkad Sreekrishnapuram
Place of Assessment	Phase I - Karuvadam Ooru, Kavundikkal Ooru Phase II - Mele Anavai, Thazhe Anavai, Kavundikkal Ooru Phase III - Galazy Ooru and Karukkan Kundu Ooru Phase IV - Installation at Kurukkan Kundu Ooru

CORAL Coordinator	Dr. Anitha R, AP (ECE)
Principal GEC Palakkad	Dr. Meenakshy K

1. Introduction

The project for the installation of solar panels at Attappady Tribal Villages emerged as a result of a collaborative effort between Government Engineering College (GEC) Palakkad, Sreekrishnapuram, and the IEEE Student Branch (SB) of GEC Palakkad. This partnership aimed to address the critical need for sustainable energy solutions in remote tribal communities. The project was conceived under the Collaborative Research and Learning (CoRaL) framework, aimed at integrating academia with societal challenges for mutual benefit.

2. Project Background

Attappady, located in the Palakkad district of Kerala, is home to several tribal communities facing socio-economic challenges including inadequate access to basic amenities like electricity. The project received impetus from initial visits by the IEEE SB of GEC Palakkad, which highlighted the pressing need for energy interventions to uplift the standard of living in these marginalized communities.

3. Different phases of project

3.1 Phase I (October 15, 2022) - Visits to Karuvadam, Kavundikkal Ooru

The project's groundwork began with an exploratory visit to Attappady Tribal Village by faculty and students from GEC Palakkad, in collaboration with the IEEE Student Branch of GEC Palakkad. This visit aimed to understand the local socio-economic context and identify key areas where technology could be leveraged to improve living conditions.

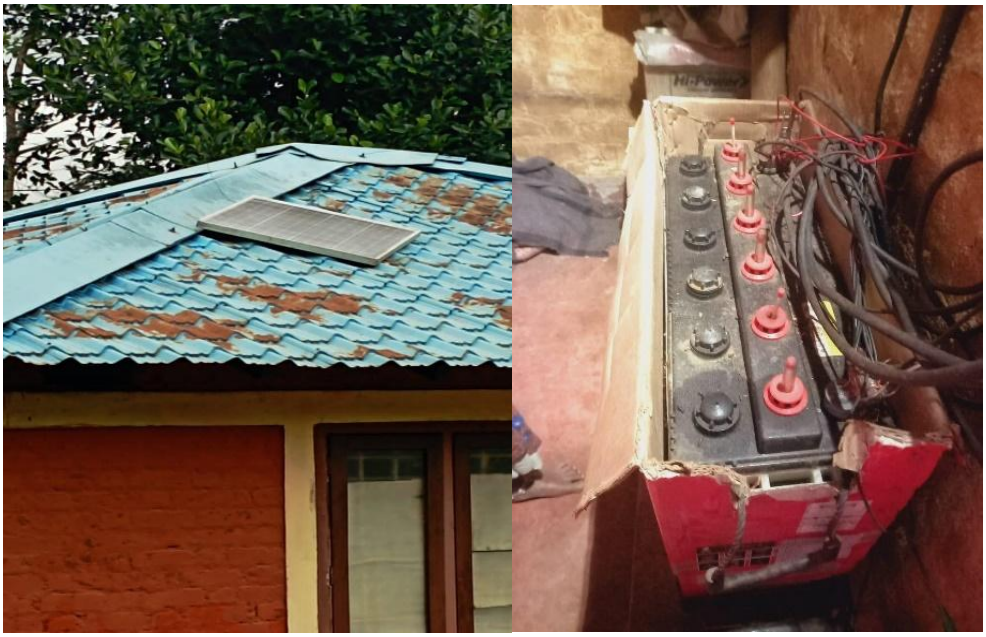
Visit to Karuvadam Ooru and Kavundikkal Ooru during Oct. 5, 2022

3.2. Phase II (February 2-3, 2023) - Mele Anavai, Thazhe Anavai, Kavundikkal Ooru

During a subsequent visit by the IEEE Student Branch of GEC Palakkad, specific areas like Anavai and Kavundikkal villages were surveyed to assess the existing energy infrastructure. It was observed that reliance on solar energy was significant due to limited access to conventional power sources.

At Mele Anavai and Thazhe Anavai, the situation was dire, lacking proper electricity and transportation. They were depending upon solar resources for lighting up their houses.

Though, installation of solar panel s were done in most of the houses in the Ooru, most of them were not in good working condition due no maintenance and degradation of the batteries.



Pictures of batteries and panels at Mele Anavai

3.3. Phase III (January-May 2024)

Following these preliminary assessments, the faculty coordinator, Dr. Vinita Chellappan submitted proposal under Collaborative Research and Learning (CoRaL) and the project received formal funding to implement solar energy solutions.

Upon receipt of funding in December 2023, it came to our attention that Kerala State Electricity Board Limited (KSEBL) had initiated power supply to the locality. However, it was informed by the Integrated Tribal Development Project (ITDP) Cell Project Officer, that Galazy Ooru, situated approximately 6 kilometers from Thazhe Anavai, remained devoid of any lighting infrastructure. Access to this area is solely through the forest, serving 13 households residing there. Additionally, during discussions with the Project Officer in Attappady, it was identified that Galazy Ooru required standalone renewable energy sources, specifically solar power, to meet the community's needs. Consequently, permission was sought and obtained from the Sub-Collector’s Office, Nodal Officer to Attappady Tribal Village and the Integrated Tribal Development Project (ITDP) Cell, Attappady, to conduct visits from January 16th to May 31, 2024.

3.3.1 Detailed Project Execution

For the execution of the project the following stages of work were planned by the team.

Assessment: A thorough assessment of the energy needs of each household in Attappady Galazy Ooru and Kurukkan Kundu Ooru.

Equipment Purchase and handling: Based on the energy needs a detailed specification was submitted to Government for purchase of equipment/installation.

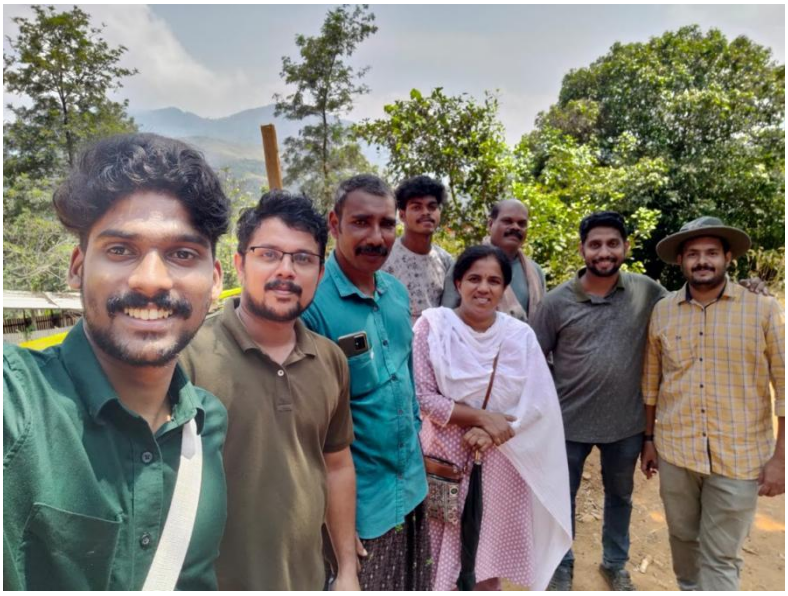
Training: Provide training sessions for students on solar panel and solar charge converters

Installation: The installation of standalone solar power systems, ensuring minimal disruption to the daily lives of the residents.

A. Assessment

In-depth assessments were carried out in Galazy Ooru (January 18-19, 2024) and Kurukkan Kundu Ooru (April 22, 2024) to gauge the energy needs of households. Data collected during these visits formed the basis for designing appropriate solar power systems.

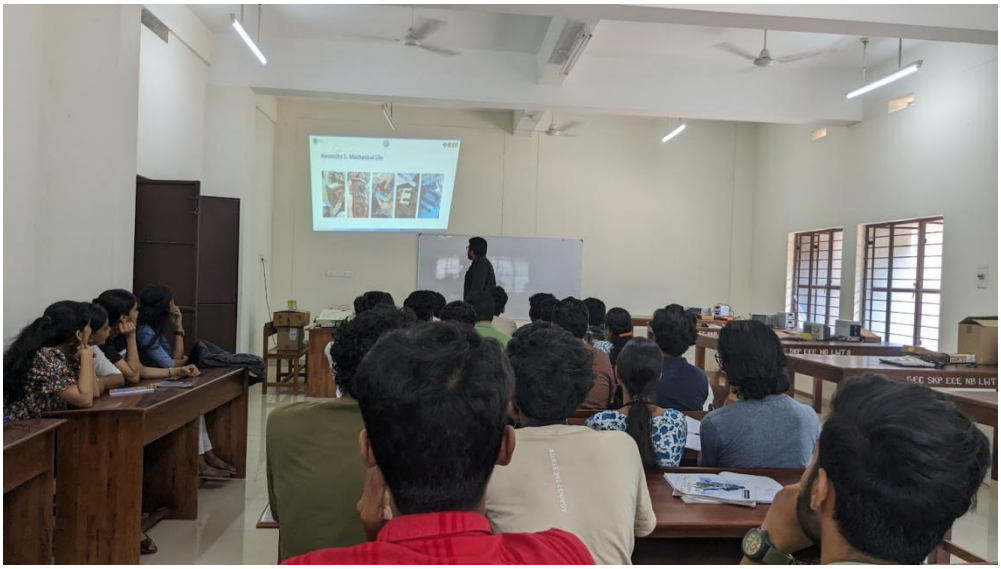
Visit to Galazy Ooru during 18th-19th January 2024



Visit to Kurukkan Kundu Ooru during 22nd April 2024

B -C. Equipment Procurement and Training

Detailed specifications for solar equipment were drafted and submitted for procurement. Concurrently, students involved in the project, underwent specialized training to acquire practical skills related to solar technology.

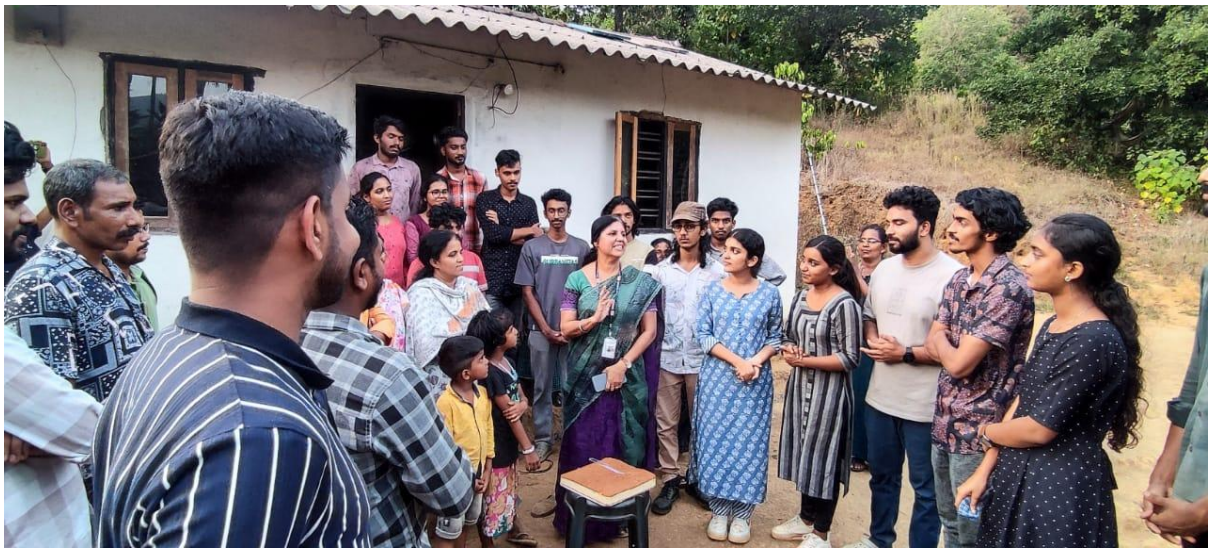


Workshop on solar charge controllers

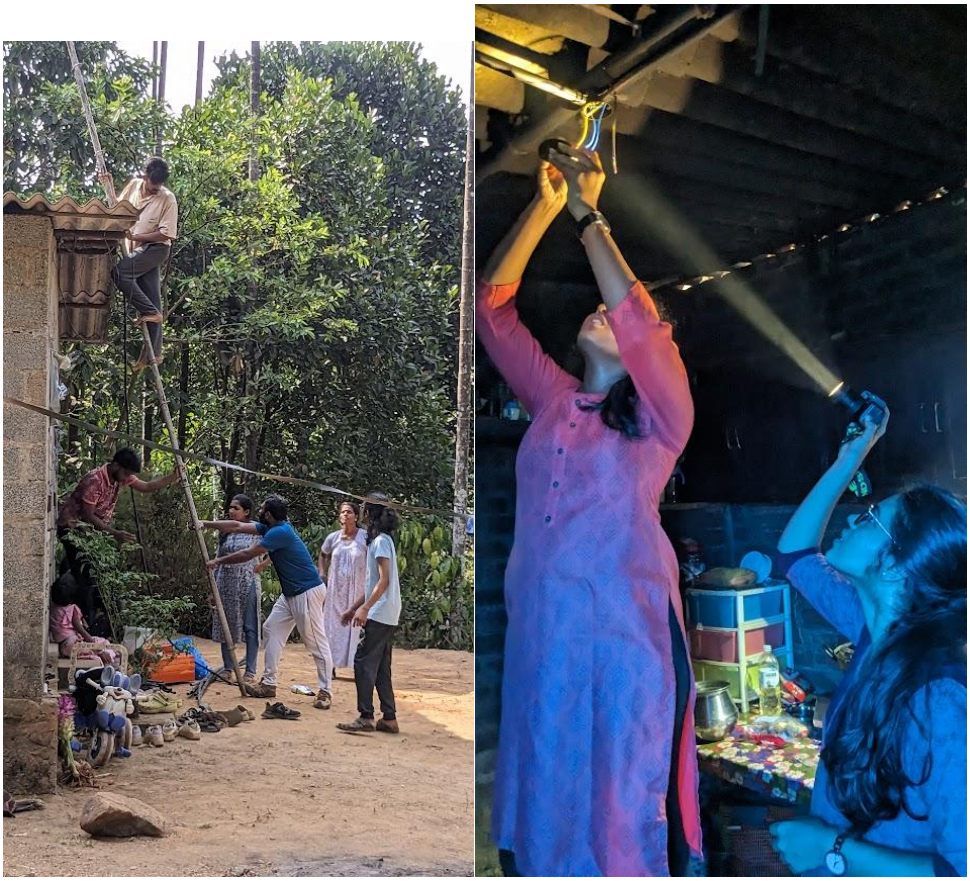
D. Installation

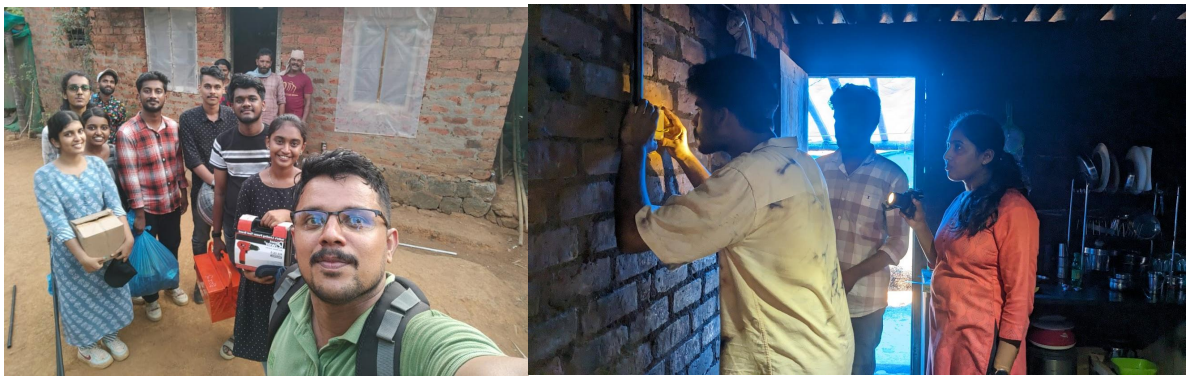
The installation phase commenced with a team of nineteen students and six faculty members deploying standalone solar power systems in Kurukkan Kundu Ooru (April 29-30, 2024). The installation process aimed to minimize disruption to daily life while ensuring sustainable energy access for households.

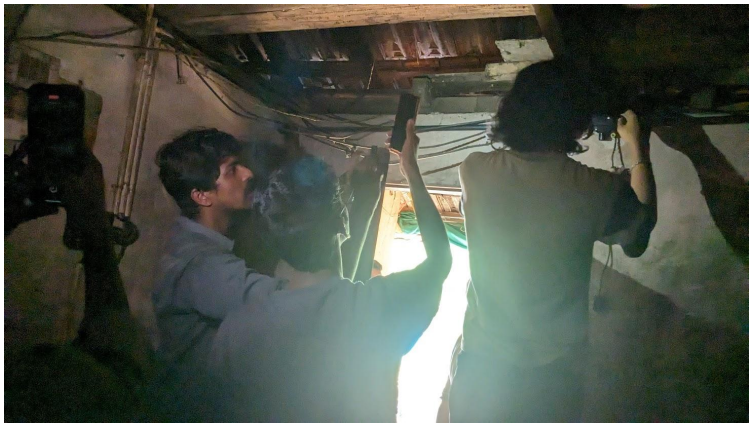
A total of 10 houses were lighted with 3 DC lamps of 9W each. The panels, charge controllers and battery were designed based on the above requirement.



Inauguration at Kurukkan Kundu Ooru by Dr. Meenakshy K, Principal GEC Palakkad



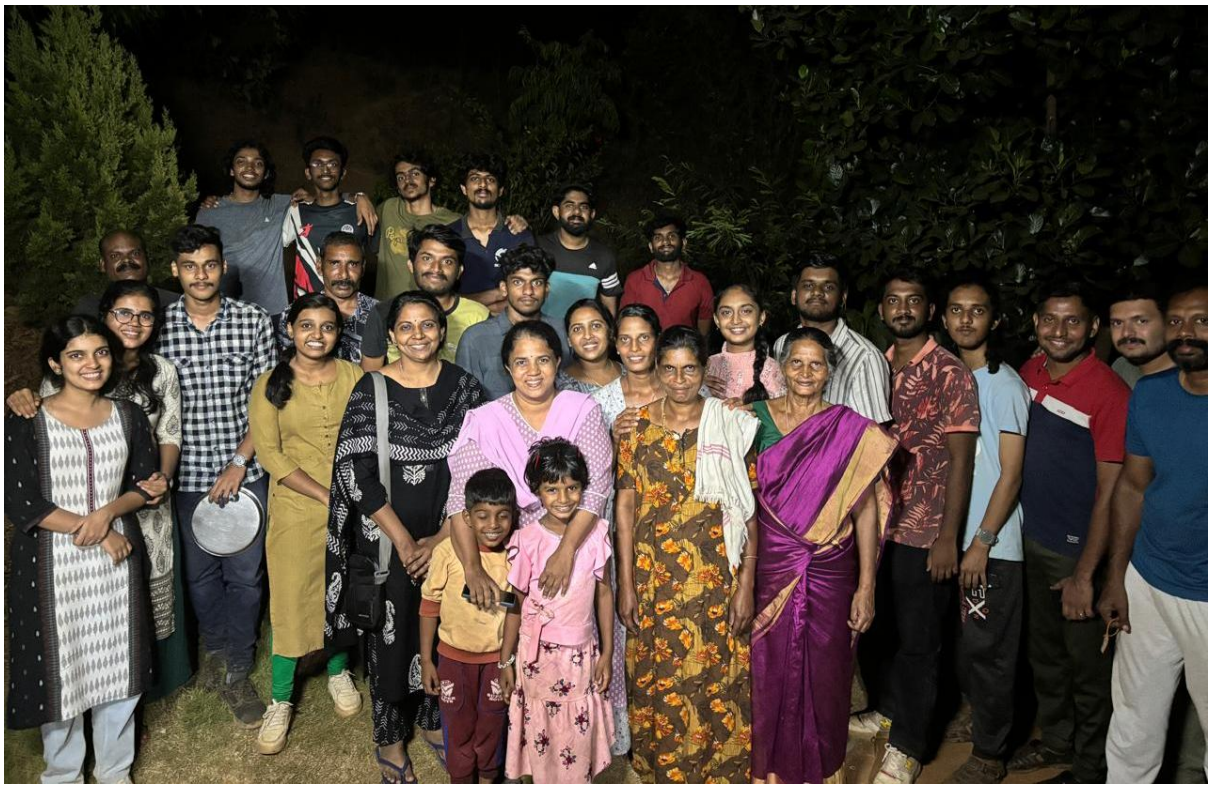




Moments captured during installation

5. Impact and Outcomes

The successful installation of solar panels in Kurukkan Kundu Ooru illuminated ten households, providing a tangible solution to the energy needs of a remote tribal community. Beyond the immediate impact on energy access, the project empowered students, including members of the IEEE SB, with hands-on experience in renewable energy technologies and community engagement.



Student and faculty team with Kurukkan Kundu Ooru community

6. Student Team details

Attached in Annexure I

7. Acknowledgements

The project's success is attributed to the dedication and collaboration of various stakeholders including the IEEE SB, faculty members, CoRaL Coordinator Dr. Anitha R, local authorities from the ITDP Cell and Sub Collector's Office, Attappady. Special mention is attributed to Shri Manikandan Lakshmanan, Sub-Engineer, KSEBL for his unwavering support during all site visits and the crucial installation phase. The support of the members of the Kurukkan Kundu Ooru community for their indispensable logistical support during the installation process. Their efforts in arranging accommodations and providing sustenance were pivotal to the smooth execution of our project activities.

Their support and guidance were instrumental in overcoming logistical challenges and ensuring the project's smooth execution.

8. Conclusion

In conclusion, the installation of solar panels at Attappady Tribal Villages stands as a testament to the transformative potential of academia -community partnerships. This project not only addresses immediate energy needs but also exemplifies the broader mission of GEC Palakkad to harness engineering innovation for societal welfare.

ANNEXURE I

Student and Faculty Team

Phase I

Visit I (Assessment at Galazy Ooru, Attappady Tribal Village - Oct.5. 2022)

Student Members	
1. Sreelakshmi Ram B – PKD19EC055	7. Aiswarya M L – PKD20EC007
2. Haritha E S – PKD19EE029	8. Deepak D Pai – PKD20EC023
3. Sneha S – PKD19IT049	9. Thamanna M – PKD20CE059
4. Femina N – PKD19EC026	10. Jumna Parveen – PKD19EC033
5. Guruvanditha S – PKD19EC027	11. Fathima Jumana – PKD19EC025
6. Aksa N Panicker – PKD19EC006	12. Sherhin P P – PKD20IT048
Student Members	
1. Prof. Muhammad Farooque E K, AP (EE)	
2. Prof. Vipin Kumar P E, AP (EE)	

Phase II

Visit II (Assessment at Galazy Ooru, Attappady Tribal Village - 2-3, Feb. 2023)

Student Members	
1. Sreelakshmi Ram B, S8 ECE	8. Aksa N Panicker, S8 ECE
2. Sudeepth P. S., S8 CSE	9. Gurvanditha S, S8 ECE
3. Sneha S, S8 IT	10. Femina N, S8 IT
4. Haritha E S, S8 EEE	11. Lyksina Nazar, S8 IT
5. Fathima Jumana, S8 ECE	12. Anju Krishna, S8 IT
6. Jumna Parveen, S8 ECE	13. Pavan G Nair, S6 EEE
7. Sherhin P P, S6 IT	
Faculty Members	
1. Dr. Vinita Chellappan, Professor (EE)	
2. Prof. Vishnuprasad K, AP (ECE)	
Prof. Navaneeth M S, AP (ME)	

Phase III

Visit III (Assessment at Galazy Ooru, Attappady Tribal Village - 18-19, Jan. 2024)

1. Dr. Vinita Chellappan, Prof. (EE) 2. Prof. Navaneeth M S, AP (ME) 3. Prof. Vidhun M, AP (EE) 4. Dr. Dhanya K M, Asso. Prof. (EE)	5. Pavan G. Nair , S8 EEE, Student 6. Sherhin P. P., S7 IT, Student 7. K. S. Sanju Sivnarayan, S8 ECE, Student 8. Amritha Ramakrishnan, S8 ECE, Student 9. Lakshmi Parvathi P M, S8 ECE, Student

Visit IV - Kurukkan Kundu Ooru, (22nd April, 2024)

1. Dr. Vinita Chellappan, Prof. (EE) 2. Prof. Vidhun M, AP (EE) 3. Dr. Joseph Peter, AP (EE)	4. Pradeep P, S4 EEE Student 5. Rithin V, S6 EEE Student

Installation at Kurukkan Kundu Ooru (29-30 April, 2024)

Student Members	
1.Manuel Dominy (S4 IT) 2.P.Y Muhammed Rahil (S6 ME) 3.Alan R A (S4 IT) 4.Adwaith Anilkumar (S6ME) 5.Vivek P S (S6 CSE) 6. Aleena O K (S6 CSE) 7. Agnes Davies (S6 CSE) 8. Jubuhan TT (S6 CSE) 9.Nandana V S(S6 CSE) 10.Pradeep P (S4 EEE)	11.Rithin V (S6EEE) 12. Adhil Jahan C M (S6 EEE) 13.Rishikesh (S8 EEE) 14. Amal C M (S4 EEE) 15. Archana N K (S6, IT) 16. Yatheesh Naik P (S6 EEE) 17. Aiswarya P (S6 EEE) 18. Sreeram Krishna KS (S4 ECE) 19. Ullas kumar U (S8 EEE)
Faculty and Staff	
1. Dr. Vinita Chellappan, Prof. (EE) 2. Dr. Dhanya K M, Asso. Prof. (EE) 3. Prof. Vidhun M, AP (EE) *4.* Prof. Navaneeth M S, AP (ME)	5. Dr. Joseph Peter, AP (EE) 6. Mr. Ajith P, AP (EE) 7. Mr. Shanoop K S, AP(EE)